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features

28

The History Thief

In perhaps the largest heist of its kind, rare books, antique maps and precious illustrations worth \$8 million disappeared from a Pittsburgh library. But only this summer have we learned how the shocking story ends
by Travis McDade

38

Chasing the Pirates

Nations around the world join forces to pursue rogue ships that illegally haul millions of tons of valuable fish from the oceans, causing untold ecological damage
by Tristram Korten



A view of the third cataract of the Nile River from an Ottoman-era fort in Sudan.

52

◀ In the Land of Kush

Despite its astonishing pyramids, the ancient kingdom in northern Sudan was long neglected by scholars. Now its many wonders are being rediscovered
Photographs by Matt Stirn
Text by Isma'il Kushkush

66

The Bombing and the Breakthrough

During World War II, a German attack on an Allied port in Italy left thousands of troops with mysterious, deadly burns. The hunt to find the cause would lead to a treatment for cancer
By Jennet Conant

prologue

09 American Icon: The mighty Mississippi

• Swimming the distance

12 Art: Quilting in code

14 Genealogy: Reckoning in Montgomery

• African American Union soldiers

22 Origins: Asthma inhaler

24 National Treasure: Resurrection City mural

26 Crossword: Square deal

04 Discussion

06 Institutional Knowledge

by Lonnie G. Bunch III

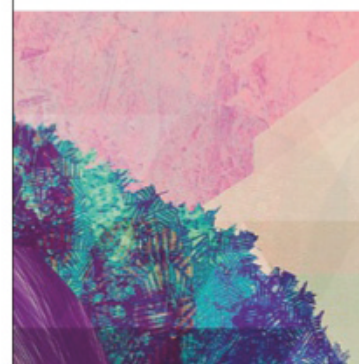
88 Ask Smithsonian

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Cover: A pyramid of an unknown king at the Kushite necropolis of Meroe in Sudan.

Photograph by Matt Stirn

14



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“There is only lip service paid to the **plight of this species** in the wild.”

Endangered Bonobos

You can imagine my excitement when I received the *Smithsonian* with the stunning close-up of the bonobo Teco filling the cover (“The Divide,” July/August 2020). However, there is only lip service paid to the plight of this magnificent species in the wild, and alongside the beautiful images of bonobos by the photographer Kevin Miyazaki, the story included a number of other, older photographs of humans in direct contact with the apes themselves. We know from published research that images of endangered primates with humans, or human artifacts, give people the impression that non-human primates are not endangered, or even worse—that they make good pets. Including these images without a discussion of these threats is frankly irresponsible. I think *Smithsonian* missed an opportunity to focus on the conservation status of the species most closely related to our own and identify ways for humans to do something positive for our evolutionary next of kin. The current pandemic provides a fitting context for the human

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species to begin a new era of scientific discovery that liberates us from the idea that we have dominion over our planet and all its inhabitants.

— **Jared Taglialatela** | president and director
 Ape Initiative, Des Moines

The Next Pandemic

By their watchfulness “The Virus Hunters” are performing a valuable service. But this “small, influential cadre of researchers who believe that such epidemics can be prevented” ultimately will fail. Just as with wildfires and floods, preventing small conflagrations may buy some time, but an outbreak that escapes control eventually will occur. Long-term solutions can only be found at the interface between the natural and the developing world, in controlling such activities as the consumption of wild animals, the occupation of forests, construction on flood plains, or release of sequestered carbon into the atmosphere.

— **Larry Blain** | Poulsbo, Washington

The Real Chef

In “Post-Colonial Custard,” you should have mentioned the name of the chef who came back from France with Thomas Jefferson and actually made the ice cream. The individual who likely did the work was the future president’s enslaved chef, James Hemings (brother of Sally and half brother of Jefferson’s deceased wife, Martha). Please do better, be more inclusive and give credit where credit is due.

— **Karen Baird** | Kennett Square, Pennsylvania

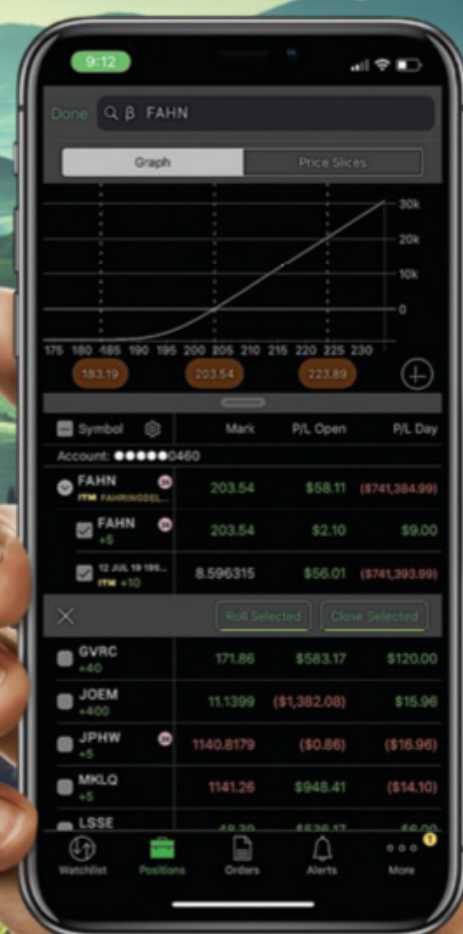
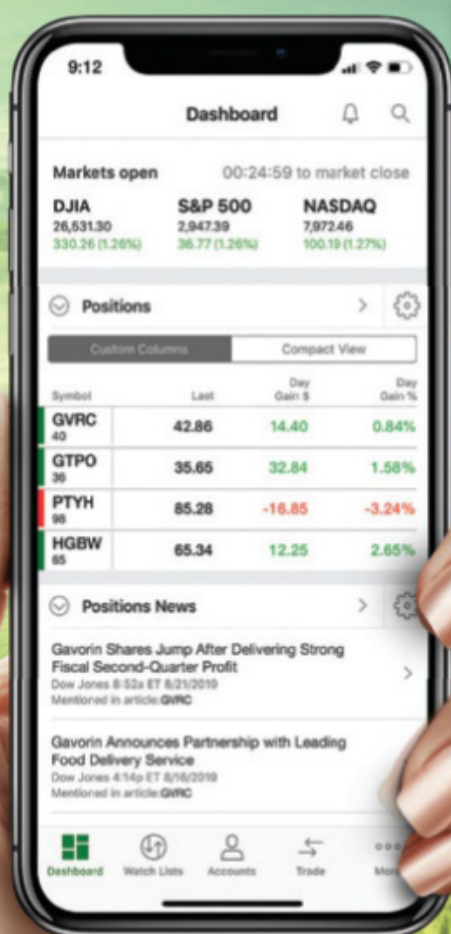
Corrections: “Senator McCarthy’s Nazi Problem” said McCarthy was one senator among 100. In fact, there were only 96 senators at the time.

Clarifications: In “Encountering Infectious Disease,” we called the Bubonic plague the deadliest pandemic in recorded history with “more than 25 million” deaths. A more complete estimate is 25 million to 200 million deaths. The caption about the West Coast smallpox epidemic of 1775–1782 mentioned gold seekers; in fact, they were involved in a later outbreak, in 1862.

In “Updating America” (June 2020), we noted that Jacob Lawrence’s “Struggle” Panel 21 depicted U.S. forces defeating Tecumseh at the Battle of Tippecanoe. While Tecumseh’s forces were defeated, the Shawnee chief himself was not present.

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Lesson Plans

COMMITTING TO OUR EDUCATIONAL MISSION MEANS REACHING PEOPLE WHERE THEY ARE

GROWING UP THE KID of two educators meant that our dinner table was more than a place for shared meals; my parents would dole out family wisdom, quiz us on current news, and expect us to opine on any topic from Socrates to Sojourner Truth. They ingrained in me early the importance of education.

That's why, when I think about how the Smithsonian can be of value to our public, the answer is clear: education. And as our country's educational practices and structures have been disrupted by Covid-19, we must redouble our efforts to support audiences to learn and grow. During the pandemic, we have stepped up our offerings for learners of all ages—supplementing school curricula, presenting lecture series and creative programming, providing digital tours and online exhibitions.

At the same time, we recognize that we have a particular responsibility to direct our energies to where the need is greatest: in K-12 education.

Since becoming Secretary, I've prioritized the goal of integrating the Smith-

sonian into every classroom in the country. This fall, as schools resume with a mixture of in-person and remote learning, we recognize that for many young people, their classroom is their home. Committing to our educational mission means reaching people where they are by increasing our digital resources, working with school districts to develop effective distance learning tools, supporting educators and families in an unfamiliar situation.

The rapid transition to online learning that Covid-19 demanded has cast into stark relief the disparities always present in our education system. Many young people, especially those already underserved, do not have access to a computer or reliable internet access. This summer, the Smithsonian has committed to bridging the digital divide, providing no-tech educational resources to young people across the country. Through a partnership with *USA Today*, we distributed 75,000 "Summer Road Trip" learning packets that offer hands-on activities to help kids explore STEM, the arts, and history.

Soon after the Smithsonian was founded, Joseph Henry, its first Secretary, said the institution should be measured "by what it sends forth into the world." The start of the school year is the perfect opportunity to recommit to that ideal. To send forth into the world the thrill of an unexpected discovery, the courage to have our assumptions challenged, and the tools to imagine and build something new. ♦

SEE MORE of Smithsonian's educational offerings at learninglab.si.edu/distancelearning

> The "Summer Road Trip" uses Bessie Coleman, the first African American to earn a pilot's license, as inspiration to build a paper biplane.



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THE PAST IS

prologue

By
Dean Klinkenberg

AMERICAN ICON

Rollin' Along

The secret past and uncertain future of the great river that has defined a nation

▲
The Mississippi Delta, seen from space in 2001.

NASA / JESSE ALLEN

N 1758, THE FRENCH ETHNOGRAPHER Antoine-Simon Le Page du Pratz published *The History of Louisiana*, in which he wrote that the Mississippi River's name meant "the ancient father of rivers." Though his etymology was off—the Ojibwe words that gave us Mississippi (*Misi-zibi*) actually mean "long river"—the idea has proven durable. "Ol' Man River" buoyed *Show Boat*, the 1927 musical by Jerome Kern and Oscar Hammerstein II. During the 1937 flood, Raymond Daniell wrote in the *New York Times* about frantic efforts to raise barriers "faster than old man river could rise."

Now it appears that the Mississippi is far older than Le Page thought, and it used to be far bigger than the Ojibwe could have imagined. And it might even become that big again in the future.

These are the extraordinary new findings unearthed by geologists including Sally Potter-McIntyre at Southern Illinois University, Michael Blum at the University of Kansas and Randel Cox at the University of Memphis, whose work is helping us better understand the monumental events, beginning in late Cretaceous North America, that gave rise to the Mississippi, swelling it to gargantuan proportions.

In the late Cretaceous, around 80 million years ago, a mountain chain spanned the southern portion of the continent, blocking southbound water flows, so most North American rivers flowed to the Western Interior Sea or north to Canada's Hudson Bay. Eventually, a gap in those mountains formed, opening a path for the river we now know as the Mississippi to flow to the Gulf of Mexico. Scientists call that gap the Mississippi Embayment, but the



▲ An 1832 expedition led by Henry Schoolcraft identified the Mississippi's source as Lake Itasca in Minnesota.

THE FATHER OF WATERS AGAIN GOES UNVEXED TO THE SEA.

rest of us know it as the Mississippi Delta, the vast flood plain that stretches from southern Missouri to northern Louisiana. As recently as 2014, geological consensus held that the Mississippi began flowing through the embayment around 20 million years ago. But in 2018, Potter-McIntyre and her team concluded, based on the age of zircon fragments they excavated from sandstone in southern Illinois, that the river began flowing much earlier—some 70 million years ago. The Mississippi was thus born when dinosaurs

still roamed the planet; one can almost picture an alamosaurus bending its prodigious neck to drink from its waters. By contrast, the Missouri River, in its current form, dates back a mere two million years. Old Man River, indeed.

Still, 70 million years ago the Mississippi was nowhere near as large as it would become. Blum has detailed how

the waterway grew as it added tributaries: the Platte, Arkansas and Tennessee rivers by the late Paleocene, then the Red River by the Oligocene. Around 60 million years ago, the Mississippi was collecting water from the Rockies to the Appalachians; by four million years ago, its watershed had extended



into Canada, and the Mississippi had grown to an enormous size, carrying four to eight times as much water as it does today, Cox and colleagues have found. “This was a giant river, on the order of the Amazon,” said Cox.

So the river’s larger-than-life role in culture was perhaps inevitable. Until the early 19th century, the Mississippi marked the western border between Spanish and American territory, and it continues to give life to the cities that sprang up along its route. After Union forces captured Vicksburg, Mississippi, in 1863, President Abraham Lincoln saw the emancipated river as a symbol of a nation unified: “The Father of Waters again goes untroubled to the sea,” he wrote. Mark Twain, the best publicist a river ever had, inspired 150 years’ worth of dreams about floating away from our troubles. And among members of the Ojibwe, Dakota and Chitimacha tribes, who still live on portions of ancestral lands in the Mississippi Valley, a spiritual connection to the river remains strong. In 2013, a group of Indigenous women walked 1,500 miles along the Mississippi to advocate for clean water—an issue of vital importance to the 18 million Americans who get their drinking water from the river.

The river’s famed fluctuations have shaped American urbanization, too. The Great Flood of 1927 accelerated the Great Migration, as African Americans, disproportionately displaced, sought economic opportunity in cities such as Chicago and Detroit. “Old Mississippi River, what a fix you left me in,” Bessie Smith sings in “Homeless Blues,” one of many songs about the 1927 flood. That disaster also ushered in an era of unprecedented public works, as the federal government sought to remake the river into a predictable route for moving bulk necessities like corn and coal.

The mighty river has inspired more than a thousand songs since 1900, including “Big River” by Johnny Cash and “Proud Mary,” in which John Fogerty (echoed later by Tina Turner) observes that “people on the river are happy to give.” That truism is confirmed every year, when people who live along the Mississippi offer a meal and a shower to the dozens of strangers who test themselves against Old Man River by paddling small boats from Minnesota to the Gulf of Mexico. ♦

READ MORE about how American radio covered the Great Flood of 1927 at [Smithsonianmag.com/mississippi](https://www.smithsonianmag.com/mississippi)

Current Event

HOW FRED NEWTON FOUND HIMSELF
NECK-DEEP IN HISTORY

By Greg Miller

THE MORNING OF JULY 6, 1930, Fred Newton waded into the Mississippi River in Minneapolis and started swimming. He told reporters he planned to reach New Orleans in 90 days. An athletic 27-year-old from Clinton, Oklahoma, Newton aimed to be the first person to swim the river’s length, hoping the exploit would bring wealth and fame.

His younger brother Byron followed in a rowboat, carrying supplies and taking notes to document Fred’s torturous journey.

On the second day, Newton encountered floating mats of manure and stinking animal parts dumped off the stockyards



The swimmer promotes his record-breaking journey.

of South St. Paul. But he kept swimming, even amid the Upper Mississippi’s treacherous whirlpools. Along the way, Newton stopped in riverside towns. A talented artist, he sometimes painted signs for local businesses in exchange for a meal or a bed.

By December, the water was frigid, so Newton donned wool underwear and slathered himself in axle grease for insulation. When he reached New Orleans on December 29—three months behind schedule—a crowd gathered to greet him, and the New Orleans Athletic Club offered him a hot bath.

Though Newton’s feat earned him a world record, it didn’t bring him riches. He went on to make a living as an insurance salesman and later founded a company that sold orthopedic products. He died at age 89 in 1992 in Gainesville, Texas, where, according to his son Phil, he mostly preferred to watch other people swim. ♦

BLANKET STATEMENTS

Inspired by antique “freedom quilts,” an artist stitches secret messages into his own textured pieces



ACCORDING TO AFRICAN AMERICAN oral tradition, people escaping slavery via the underground railroad relied on a code sewn into quilts, which were hung in windows or over clotheslines to mark the route to freedom. The legend remains controversial, but when New York-based artist Sanford Biggers stumbled upon it more than a decade ago, he was intrigued by the possibility that the handmade bedding might have carried hidden messages. Since then,

Chorus for Paul Mooney, 2017, made of antique quilt, assorted textiles, acrylic and spray paint.

Most of the quilts used in Biggers' works were donated or came from thrift stores.

he has transformed dozens of pre-1900 quilts into mixed-media artworks, over 60 of which are slated to be on view starting this month at the Bronx Museum of Art. “I thought it would be interesting to add extra layers of code,” says Biggers, who draws on urban culture, Buddhism and history to construct his own secret iconography. “I’m actually communicating with the original creators of that quilt,” he explains, “so when these are viewed in the future it can be read as a sort of transgenerational conversation.” ♦



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Daring to Face the Past

Two women from disparate worlds confront a terrible injustice that one family's ancestors perpetrated on the other's

W

WE WERE AN ODD COUPLE, Karen and I, when we first arrived at the Montgomery County Archives in Alabama. These days, descendants of both slaves and slaveholders come to the archives seeking the truth about their past. Rarely do we arrive together.

Karen Orozco Gutierrez, of Davenport, Iowa, is the great-granddaughter of an enslaved man named Milton Howard, whose life she has long worked to document. As a girl, Karen heard stories about her great-grandfather, who told his children he was born in the 1850s to free people of color in Muscatine, Iowa, but that when he was a child he was kidnapped by slavers and taken with his family down the Mississippi ➔

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River. His first enslaver was a planter in Alabama named Pickett.

Combing through records online, Karen established that Pickett had owned two cotton plantations, Cedar Grove and Forest Farm, both near Montgomery. But in all her searching of slave inventories, she couldn't find anyone named Milton.

The man Karen believed was Milton's enslaver was my great-great-grandfather on my father's side. My father, Richard G. Banks, was born in Montgomery in 1912, but he left his roots for the itinerant life of a career Army officer. I attended 17 schools in five states and two countries, reinventing myself each time we moved. This was not an upbringing that encouraged looking to the past. I barely identified with the person I'd been the year before, let alone with distant ancestors.

Yet the evidence was there. From my father, I inherited an archive about our Alabama kin: wills bequeathing family oil portraits; yellowed newspaper clippings about antebellum homes-turned-museums; hand-drawn genealogical charts. I called this trove "The Pile" and quarantined it in a closet. If these bits and pieces told a story, I wasn't ready to hear it. But recently, when a reinvigorated white supremacy seemed to be asserting itself, I knew it was time to take the Confederates out of the closet.

Researching A.J. Pickett online took me to AfriGeneas, a website that helps African Americans trace their enslaved ancestors—and to Karen. On the site's message board, I discovered that members viewed descendants of slaveholders, like myself, as potential sources of information, trading tips on the best way to approach us.

Karen had posted a note seeking anyone who might have information about an Alabama man named Pickett on whose plantation she believed her great-grandfather had been enslaved. When I wrote identifying myself as Pickett's kin, she responded: "I have been waiting for this day!"

That was July 12, 2018. Over the next several months, Karen and I corresponded every few days. She asked me to look through my papers for any mention of slaves, any bills of sale or probate records. "Really just anything."

I was sorry to tell her I'd found nothing to help with her search. Karen took this news graciously, and we continued to correspond. She wrote to put me at ease: "You didn't own slaves."

No reckoning would be adequate, I knew—but looking away was no longer an option. I wrote to Karen that I was thinking of going to Montgomery to look at the Pickett family papers. She suggested we tackle them together. Karen was hoping to locate



Karen Orozco Gutierrez, left, with the author in Autaugaville, Alabama, where the Cedar Grove plantation once stood.

a document that would confirm A.J. Pickett as Milton's slaveholder. She knew the odds were long; still, she told me, "I am looking to visit the area where Grandpa was a slave. I want to walk where he may have walked. It's not enough to know things in general. I want to know the details."

We met for the first time in the Charlotte, North Carolina, airport, awaiting the plane that would take us to Montgomery. I was nervous. I had signed on for what amounted to a weeklong blind date. Karen's emails had been warm, but given what I represented to her, how would she really feel? Would it be awkward meeting face to face? What would we say?

Suddenly there she was—a tall, slender woman walking toward me across the lounge, dressed elegantly in tailored brown leather pants, a silk blouse and a black trilby hat. She wrapped me in a big hug. Karen seemed to sense my uneasiness, and if reassuring me was a burden, she shouldered it lightly. "It was providential that we connected," she said later. "That was your doing."

With a comfortable rapport, we set to work. We imagined the Montgomery of the 1840s—the days when shackled slaves were marched from a dock on the Alabama River up Commerce Street and into a nearby slave warehouse. They would have passed the townhouse, long since torn down, where my great-great-grandfather lived with his wife and nine children when he wasn't at one of his plantations. The slave warehouse is now the headquarters of the Equal Justice Initiative, a racial justice organization founded by public interest lawyer Bryan Stevenson.

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The morning after our arrival, Karen and I drove out to Autaugaville, site of Cedar Grove, to look around. Only woods remain where the plantation houses once stood. We took a picture of ourselves at a cracked historical site marker describing A.J. Pickett as a “Scholar-Planter-Trader.” From there, we headed to our main research site, the Montgomery County Archives, where property transactions were recorded. Housed in the basement of a brick building, the archives are overseen by Dallas Hanbury, an Alabaman with a PhD in public history.

To track my great-great-grandfather, Hanbury told us, we should start with the deed indexes, looking for transactions to which A.J. Pickett had been a party. Karen and I began turning the huge pages. After years of research, Karen was accomplished at deciphering 19th-century handwriting, and she read out the names and numbers of the deals. I scribbled a messy list of nearly 30 entries. This would be our starting point for tackling the deeds themselves.

A.J. Pickett was not just a planter but also a pioneering historian. I had inherited a musty first edition of his 1851 opus with the title stamped in gold: *History of Alabama: And Incidentally of Georgia and Mississippi, from the Earliest Period*. The book ends in 1819, when Alabama joined the United States.

On the subject of plantation slavery, Pickett’s book is mostly silent. For a long time, I’d imagined that my ancestor led a life of the mind, removed from the brutal realities of his time. I could not have been more wrong. Slavery was essential to his life and work. Indeed, A.J. Pickett believed that slavery, as practiced in the South, was both benign and necessary, and argued the point forcefully in his writing. The South’s steamy climate, he wrote, was “so destructive to the constitutions of the whites” that the land “could [n]ever have been successfully brought into cultivation without African labor.” For A.J. Pickett, abolitionists were enemies of progress. “These philanthropists would be willing to see our nation exterminated, and our throats cut, because we are pursuing a system of mild domestic slavery.”

Mild domestic slavery! A cruel oxymoron gave me a glimpse into my ancestor’s justification for owning human beings—Karen’s ancestors among them.

After the archives closed for the day, Karen and I adjourned to a restaurant for enchiladas. Her late husband, she told me, had been a veterinarian from Mexico. I learned she was Catholic and that she worked out three times a week, a discipline she continued while we were in Montgomery. She confessed

that she’d held stereotypes about the Deep South. “Now I realize I probably could have driven here,” she said, “but I would have been afraid to stop and get gas along the way.”

Karen had arranged for us to tour the Figh-Pickett House the next morning, the sprawling mansion that A.J. bought as one of the family’s many residences. He didn’t live long enough to move in, dying in October 1858, at age 48, two weeks after the sale was final. His widow, Sarah, lived in the house for 36 years, running it as a boardinghouse during and after the Civil War. The building is now home to the Montgomery County Historical Society.

When Karen scheduled our tour, she’d mentioned to the director that I was a Pickett descendant and she the descendant of a Pickett slave.

“Are you two related?” he’d asked.

“Not that I know of,” Karen deadpanned.

The director of the historical society, a courtly man named James Fuller, took us up to the cupola where Sarah Pickett had hidden the family silver from Union soldiers. He lamented that almost none

of the silver had ended up at Pickett House, save one silver platter; the rest had gone to a descendant in Ohio.

Not all of it, I was tempted to say. Not the two fluted serving spoons in my silverware drawer at home, one of them engraved “Eliza to Corinne Pickett.” I later told Karen about them, and we wondered whether Milton had ever polished them.

Fuller asked if I’d been to Montgomery before. His question brought back a sudden memory: I was 9, and my father had brought me to visit two aged cousins, a pair of sisters who shared a big house. What I recalled most vividly was their cats, which they’d trained to jump into a basket so they could be hauled to the second floor by a pulley. The sisters were A.J. Pickett’s granddaughters. One of them, Edna, was an enthusiastic family historian, and during our visit she gave my father many of the documents that ended up in The Pile. What stuck in my 9-year-old brain was the basket, and the image of the cats rising slowly in the air, as if in a storybook or a dream.

“Oh yes,” Fuller said. “That house was over on Lawrence Street. It isn’t there anymore, but we have the basket.”

Hearing this story later, a cousin of Karen’s noted that it illustrated the disparity between our situations. My ancestry was so clear that I could relate a

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BYLINES

Ann Banks writes about ancestors who were on the wrong side of history on her website Confederatesinmycloset.com.

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childhood memory to a stranger and he could identify which ancestors I was talking about and where they'd lived, even down to the bric-a-brac they'd left behind. Karen, by contrast, had worked for years just to confirm the basic facts of her ancestor's early life.

Back at the archives, Karen and I began our search by guessing which transactions seemed most likely to include the sale of Milton. Viewing the deeds on microfiche was tedious, and after a few hours I returned to the hotel. Karen stayed, even though it was near closing time.

I had barely set foot in my room when an email arrived with the subject line: "I found Milton!" The note continued, "I transcribed this in a hurry—it's a first draft—but I was excited to get it to you! I just can't believe it!"

In one of the deed books, Karen discovered an entry that revealed at a glance why, in all her research into plantation slave inventories, she had never found Milton's name: He had been placed into a trust, a common practice in the antebellum South. On May 2, 1853, according to the trust certificate, 2-year-old Milton, three adults, five teenagers and seven other children were transferred from Pickett's ownership into a trust for the benefit of his wife. These enslaved people, designated only by first name and age, now technically no longer belonged to anyone named Pickett, but rather to a trust overseen by a judge named Graham.

Conclusively linking her great-grandfather to his

primary slaveholder was a triumph for Karen. There was more to learn about Milton's early life, but after years of searching, she finally had a fixed point from which to navigate.

All Karen had known before coming to Montgomery was the latter part of Milton's story: By the time he died in 1928, he'd become a celebrity in Davenport, Iowa. A front-page obituary paid tribute to him as a Union Army veteran who'd escaped an Alabama plantation and later worked at the Rock Island Arsenal in Illinois across the Mississippi from Davenport.

With her new discovery, Karen felt she had done a service to Milton—and to herself. "You want to know what happened to the people who came before you," she told me over a celebratory dinner that night.

I realized this statement was truer of her than of me. Her ancestors had been robbed of their freedom and their history. Witnessing Karen's struggle to find her forebears made it harder for me to look away from mine. Perhaps Karen sensed this, and her response was generous as usual. For our last morning in town, she suggested we visit Oakwood Cemetery,

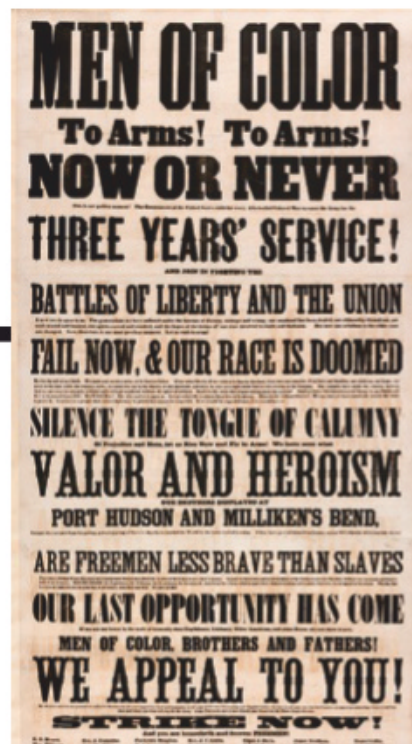
my Montgomery ancestors' final resting place.

We arrived to find an enormous cemetery dotted with cedars, crape myrtles and oak trees thick with Spanish moss. Somewhere here were

"Fail Now and Our Race Is Doomed"

REMEMBERING THE ROUGHLY 200,000 BLACK AMERICANS WHO FOUGHT FOR THE UNION

By Courtney Sexton



CALL TO SERVICE

In June 1863, the Union Army authorized recruitment of African Americans, and in speeches and newspapers Frederick Douglass implored his fellow black Americans to enlist. Fifty-three abolitionist leaders joined him in signing this broadside.



YANKEE ID

Because the Union Army didn't issue any identification tags, many soldiers paid merchants to create them, often from coins. This brass piece belonged to George W. Washington, who escaped slavery and enlisted as a musician at age 16.

UNCOMMON BRAVERY

John Lawson, a free Philadelphian, was awarded the Medal of Honor for his service as a landsman in the Union Navy during the Battle of Mobile Bay in 1864, an important Union victory. An inscription on the back of this photo notes that, though wounded, Lawson did not retreat.



A.J. Pickett's earthly remains, but we had no idea how to find him, so a young cemetery worker offered to lead us to the exact site. "Follow me," he said, hopping into his red truck.

And there it was. The headstone was eroded, but we could make out the lettering: Albert James Pickett. Also listed was his daughter, my great-grandmother, Eliza Ward Pickett Banks.

As we stood before my great-great-grandfather's grave, Karen told me she would like to say a prayer for him. "Hail Mary, full of Grace," she began. An Episcopalian, A.J. Pickett had left the Baptists, by one account, because he liked dancing too much. I suspected this was the first time a "Hail Mary" had been said at his grave—not least by a descendant of someone he'd enslaved.

Karen's generosity of spirit astonished me. I thought about the violent past that connected us and had brought us to this place. I thought of the deed conveying Milton into trust, signed 166 years ago by the man buried at our feet. I reminded Karen that she had just prayed for the person who enslaved her great-grandfather. "Yes, I know," she said. "Everyone can be granted grace."

The Germans have a word, *Vergangenheitsaufarbeitung*, which translates as "working off the past." It was coined to describe the process by which Germans have striven to acknowledge and learn from their Nazi history. Only now, in the protests over the death of George Floyd in police custody, are there glimmers that something like this might be possible in the United States—a nationwide movement to confront and examine the devastating and persistent legacy of slavery.

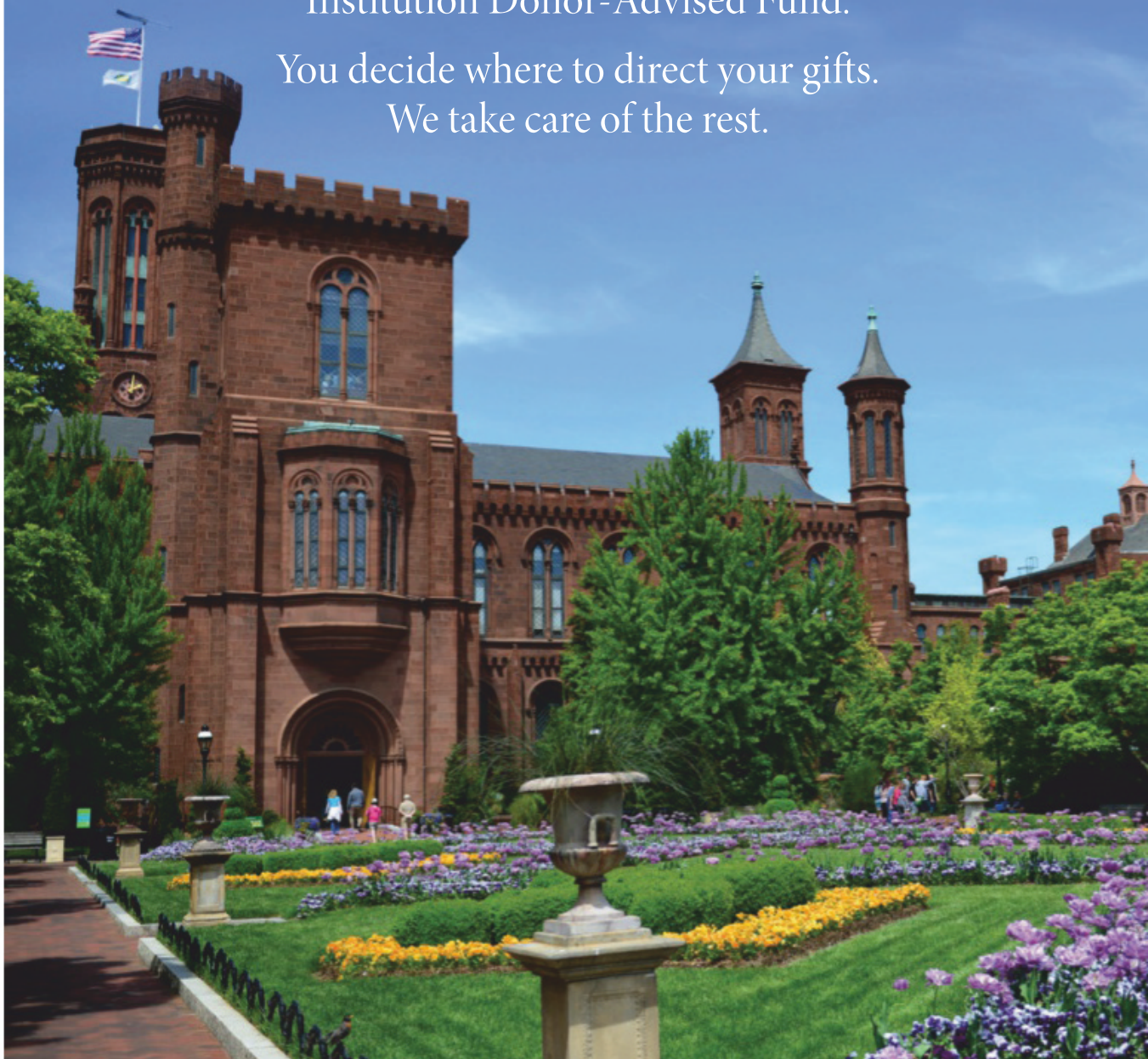
Karen and I had both been searching for something on our journey to Montgomery. Against all odds, she found Milton. I learned that the stories of my slaveholding family had been there all along, waiting for me to become willing to know them. Such willingness comes gradually, slowly—until suddenly, in moments that illuminate the landscape like summer lightning, it's no longer possible to look away. ♦

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BREATHING EASY

How a brilliant quip led to an asthma treatment that helps millions every minute

IN APRIL 1955, 13-year-old Susie Maison asked her father, the pharmacologist George L. Maison, whether there wasn't an easier way to treat her asthma. Like so many other people with the affliction, she'd been using an awkward squeeze-bulb nebulizer, and she wondered why her medicine wasn't available in a spray can, "like they do hairspray," she said. Though nebulizers of that era were more effective than the medicated "asthma cigarettes" previously in vogue, Susie's father, too, had been frustrated by the cumbersome process of refrigerating the vials of medicine and loading them into the delicate contraption.

Maison was no stranger to innovation. As an Air Force lieutenant during World War II, he planned the first system for aerial rescue behind enemy lines and earned a Legion of Merit award for perfecting the anti-gravity suit. At the Boston University School of Medicine after the war, he developed Veriloid, the first widely distributed prescription drug to treat hypertension successfully.

Now, as president of Riker Laboratories in Los Angeles, Maison was in the rare position to investigate his daughter's question. He assigned Riker's lead chemist, Irving Porush, to experiment with the possibility of a pressurized device. At the time, Riker was owned by Rexall Drugs, which did indeed manufacture hairspray. Borrowing expertise on propellants and aerosols from the cosmetics technicians down the hall, and using a recently patented metering valve capable of delivering precise amounts of atomized liquid, Porush created the first metered-dose inhaler (MDI) in just two months. By March 1956, the Food and Drug Administration had approved two new aerosol drugs for asthma, as well as Porush's device for delivering them.

"It was a game changer," says Stephen Stein, a scientist at Kindeva Drug Delivery (a descendant of



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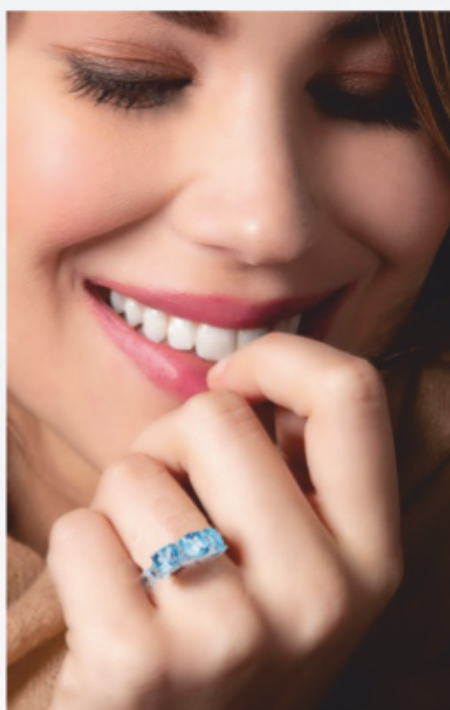
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The Writing on the Wall

A makeshift mural in 1968 speaks to a heroic struggle to overcome inequality



CAME HERE with the campaign to tell people that we got to be treated like human beings," said Henrietta Franklin, a poor black woman from Mississippi, explaining to the *Washington Post* what had brought her to Resurrection City in Washington, D.C. in the spring of 1968. That

past winter, Martin Luther King Jr. and the Southern Christian Leadership Conference (SCLC) had revealed plans to erect a mini-metropolis on the National Mall as part of King's Poor People's Campaign. The encampment would send a message that the War on Poverty was far from over. Even after King was



assassinated that April, his supporters forged ahead.

The first demonstrators arrived in May. In a matter of days, they built the roughly 16-acre encampment of tents—reminiscent of the Hoovervilles of the Great Depression—and for six weeks, at least 2,500 poor Americans and anti-poverty activists took over real estate near the Reflecting Pool. Resurrection City even had a ZIP code: 20013.

Perhaps the shantytown's most memorable structure was the Hunger Wall, which served as a backdrop for the encampment's city hall. The wall gave protesters space to write words that evoked both the movement's unity and its notable diversity. Black Americans made up the majority of the Resurrection City population, but there were contingents of Na-

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tive Americans, Latinos and poor white Americans, too. The Hunger Wall's art is the work of a broad coalition of activists who, while they had varying ideas for achieving change, shared a sweeping ambition: securing economic justice for people long denied it.

One prominent figure at the encampment was Reies Tijerina, known for helping to bring the Chicano civil rights movement to national attention. Tijerina had led a Chicano group from New Mexico, while Rodolfo "Corky" Gonzales did the same for Chicanos from Colorado, and Alicia Escalante and Bert Corona organized California groups. Each group advocated for its own slate of policies. George Crow Flies High, chief of the Hidatsa Tribe of North Dakota and one of Resurrection City's Native leaders, helped arrange ➔

a march to the Supreme Court to protest a ruling that limited Native fishing. SCLC President Ralph Abernathy made appeals for a federal jobs program, while Chicano leaders set their sights on other solutions to poverty, such as protecting land rights for Mexican Americans.

At the time, the press largely considered Resurrection City to be a failure, as the journalist Calvin Trillin noted with irony: “The poor in Resurrection City have come to Washington to show that the poor in America are sick, dirty, disorganized and powerless—and they are criticized daily for being sick, dirty, disorganized and powerless.” Public reaction, too, seemed to dwell on the internal tensions and general appearance of squalor and disorder—persistent rain and poor drainage caused flooding. In retrospect, though, such a narrow focus missed what made the effort so remarkable. At a moment of profound national reckoning, just a few years after the Civil Rights Act and Voting Rights Act were signed into law, activists at Resurrection City brought unprecedented visibility to the scope of American poverty.

The encampment’s remarkable diversity was a tribute to King, who “always exhibited a sensitivity to the needs of *Mexicanos*,” Chicano leader Bert Corona recalled in his 1994 autobiography. “He understood our particular historical conditions, but he also stressed that we needed to struggle together to correct common abuses.”

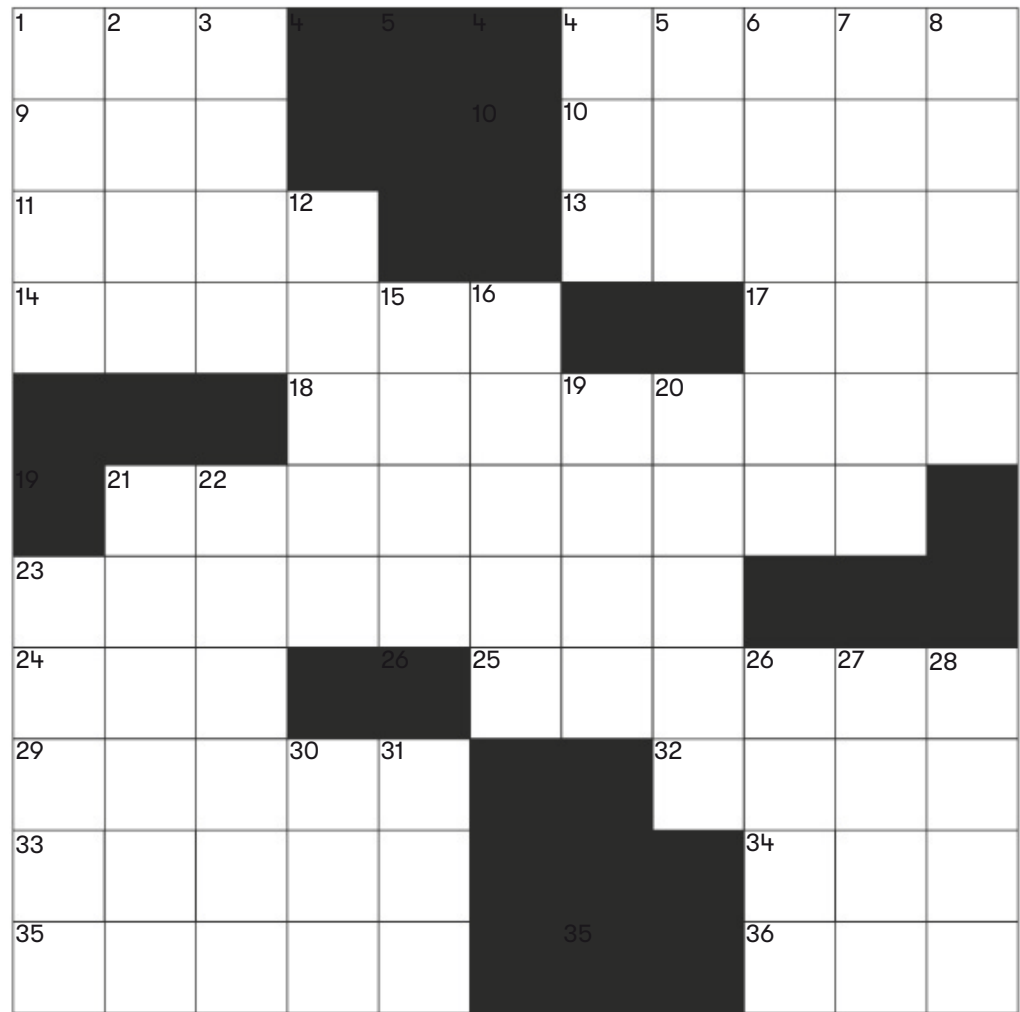
On June 24, the day after Resurrection City’s permit expired, District Police arrested the remaining demonstrators, and bulldozers destroyed the encampment. But its legacy continues to energize protests to this day. This past June, activists followed Covid-19 restrictions on public gatherings and staged a virtual Poor People’s Campaign, with religious leaders and activists assembling via livestream to protest persistent inequality. More than 2.5 million people tuned in on Facebook. In a letter to policy makers, the organizers wrote: “We have been investing in punishing the poor; we must now invest in the welfare of all.” ♦

EXPLORE AN INTERACTIVE *version of Resurrection City Hunger Wall mural at smithsonianmag.com/resurrection*

Don’t Be Puzzled

YOU CAN FIND EIGHT CLUES IN THESE PAGES

By Sam Ezersky



Across

- 1** Architect of the Poor People’s Campaign in ’68
- 4** Some polite terms of address
- 9** Geological time period
- 10** “Get ___!” (“Chill out!”)
- 11** One with a bunch of dirty clothes on the floor, say
- 13** Teacher’s note below an F
- 14** Milton who escaped from an Alabama plantation
- 17** Nay’s counterpart
- 18** Something kept in the Carnegie Library’s Oliver Room
- 21** Like the oily waters after the Bari attacks, as discovered by Lt. Col. Stewart Alexander
- 23** Industrial crime on the high seas
- 24** Whole bunch
- 25** Twos, to card players
- 29** Spammy automated internet program
- 32** Cole ___
- 33** Roofing material
- 34** “___ was saying . . .”
- 35** Pyramid city in the Kingdom of Kush
- 36** Blue voter, for short

Down

- 1** Mosquito net material
- 2** ___ Soetoro, stepfather of Barack Obama
- 3** Not just have a hunch
- 4** More, in Madrid
- 5** 70 million years, for the Mississippi River
- 6** Words before “ready?” or “serious?”
- 7** Obsolete copy machines, in brief
- 8** Obedience school command
- 12** Pertaining to atmospheric pressure
- 15** Worrisome skin reaction
- 16** C-3PO or R2-D2
- 19** Suffix similar to -ette, -ess or -trix
- 20** Phony-baloney
- 21** Best in Show winner at the 2020 Westminster Dog Show, for one
- 22** Crunchy granola snack
- 23** Liquid part of blood
- 26** Wearing something
- 27** So-called “life of Riley”
- 28** Fred Newton’s 1,826-mile journey, e.g.
- 30** Palindromic prefix with laryngology
- 31** Need for golf, but not miniature golf

See the solution on Page 84.

Meet the Watch That Shook Up Switzerland

A watch that revolutionized timekeeping at a price equally as radical.

In the history of timepieces, few moments are more important than the creation of the world's first Piezo timepiece. First released to the public in 1969, the watch turned the entire industry on its head, ushering in a new era of timekeeping. It's this legacy that we're honoring with the **Timemaster Watch**, available only through Stauer at a price only we can offer.

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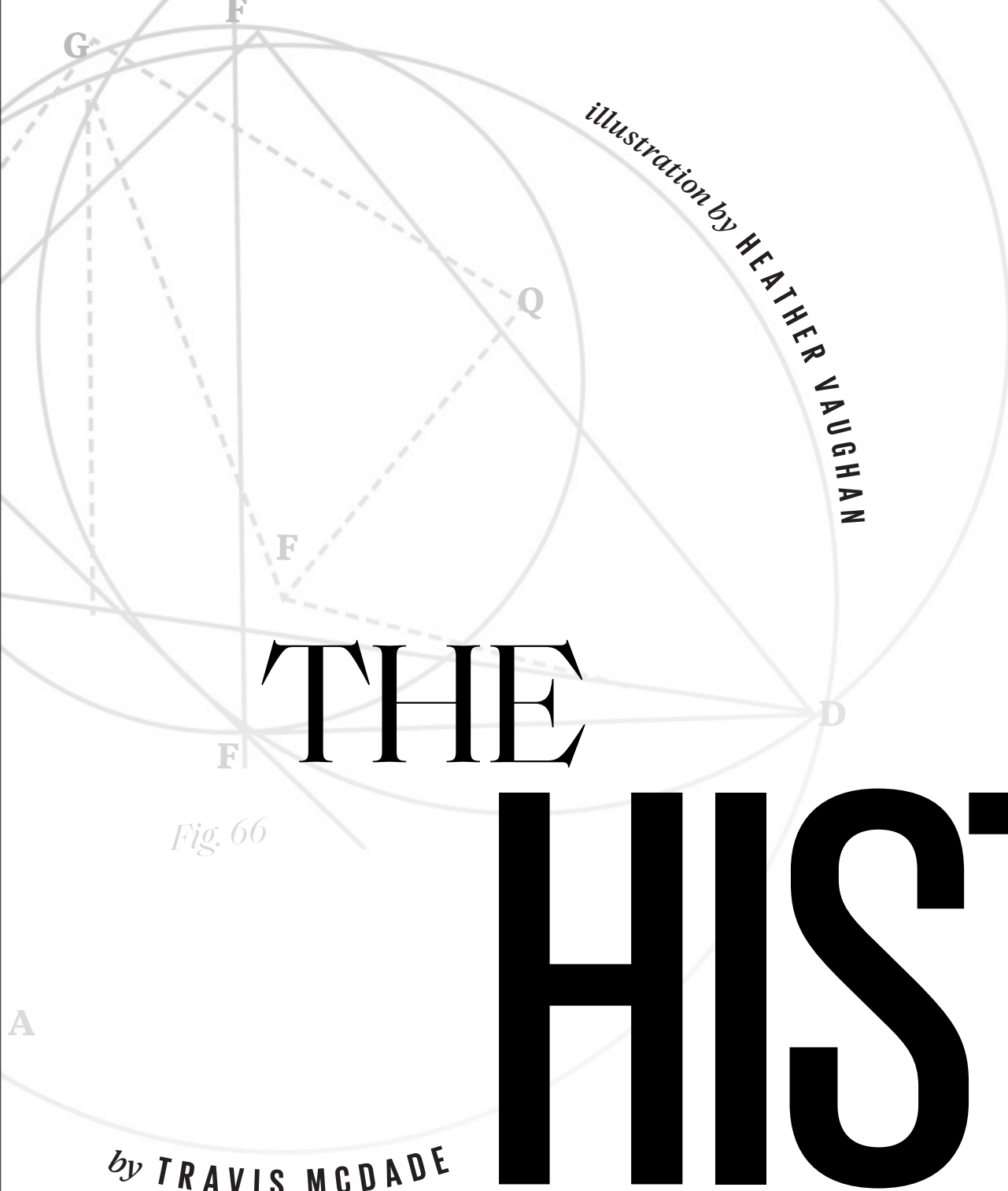


illustration by HEATHER VAUGHAN

Fig. 66

by TRAVIS MCDADE

THE

HISTOR

THIEF

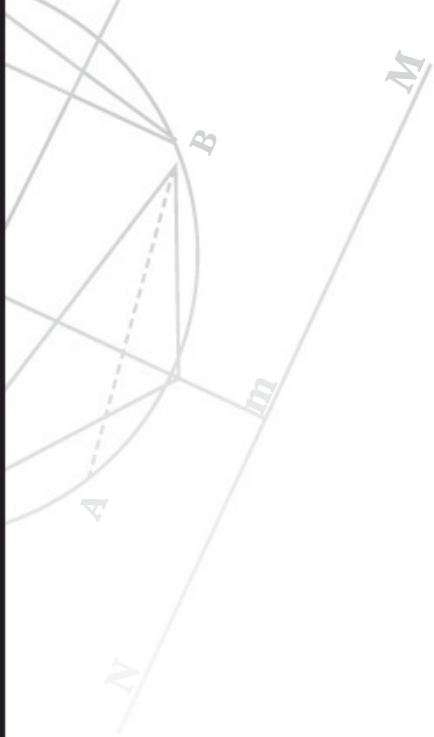
Precious maps, books and artworks vanished from a Pittsburgh library for nearly 25 years. But the caper's final chapter was written this past summer.

A SPECIAL REPORT

Y



VAUGHAN 20



LIKE NUCLEAR POWER PLANTS

and sensitive computer networks, the safest rare book collections are protected by what is known as “defense in depth”—a series of small, overlapping measures designed to thwart a thief who might be able to overcome a single deterrent. The Oliver Room, home to the Carnegie Library of Pittsburgh’s rare books and archives, was something close to the platonic ideal of this concept. Greg Priore, manager of the room starting in 1992, designed it that way.

The room has a single point of entry, and only a few people had keys to it. When anyone, employee or patron, entered the collection, Priore wanted to know.

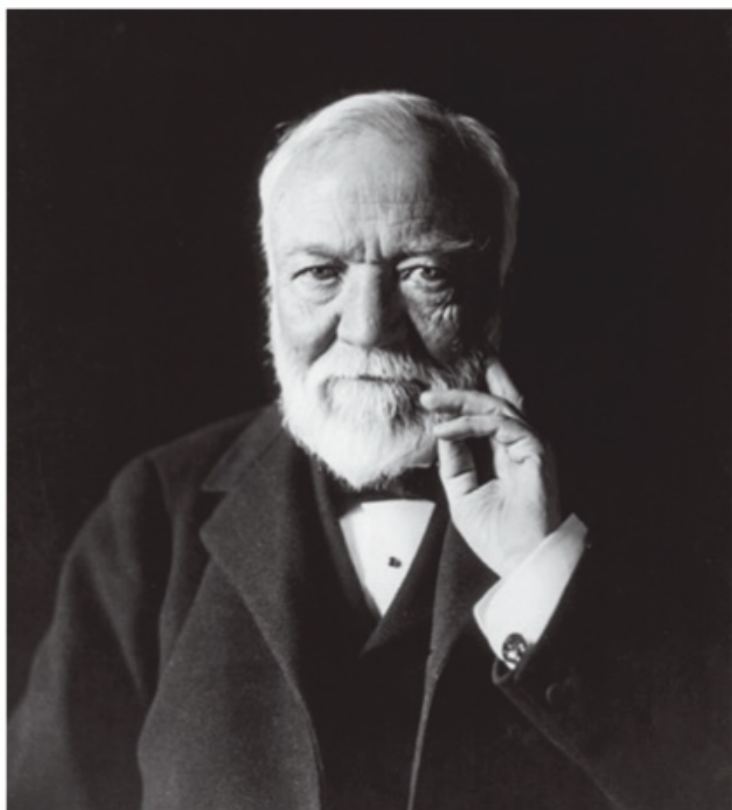
The room had limited daytime hours, and all guests were required to sign in and leave personal items, like jackets and bags, in a locker outside. Activity in the room was under constant camera surveillance.

In addition, the Oliver Room had Priore himself. His desk sat at a spot that commanded the room and the table where patrons worked. When a patron returned a book, he checked that it was still intact. Security for special collections simply does not get much better than that of the Oliver Room.

In the spring of 2017, then, the library’s administration was surprised to find out that many of the room’s holdings were gone. It wasn’t just that a few items were missing. It was the most extensive theft from an American library in at least a century, the value of the stolen objects estimated to be \$8 million.

THERE ARE TWO TYPES OF PEOPLE who frequent special collections that are open to the public: scholars who want to study something in particular, and others who just want to see something interesting. Both groups are often drawn to incunables. Books printed at the dawn of European movable type, between 1450 and 1500, incunables are old, rare and historically important. In short, an incunable is so valued and usually such a prominent holding that any thief who wanted to avoid detection would *not* steal one. The Oliver Room thief stole ten.

Visitors and researchers alike love old maps, and few are more impressive than those in *Theatrum Orbis Terrarum*, commonly known as the Blaeu Atlas. The Carnegie Library of Pittsburgh’s version, printed in 1644, originally comprised three volumes containing 276 hand-colored lithographs that mapped the known world in the age of European exploration. All 276 maps were missing.



↑
The industrialist Andrew Carnegie, seen in 1913, founded libraries around the globe. Some of the Carnegie Library of Pittsburgh’s rarest holdings were donated by him.



Many of the library's holdings had been donated over the years by the founder, Andrew Carnegie, and his friends. But in one notable instance, the library allotted money specifically to purchase 40 volumes of photogravure prints of Native Americans created by Edward Curtis in the first decades of the 20th century. The images were beautiful, historically valuable and extremely rare. Only 272 sets were created; in 2012, Christie's sold one set for \$2.8 million. The Carnegie Library's set held some 1,500 photogravure "plates"—illustrations made apart from a book and inserted into it. They had all been cut and removed from their bindings, "except a few scattered throughout of unremarkable subjects," a book expert later noted.

And this was just the beginning. The person who worked over the Oliver Room stole nearly everything of significant monetary value, sparing no country or century or subject. He took the oldest book in the collection, a collection of sermons printed in 1473, and also the most recognizable book, a first edition of Isaac Newton's *Principia Mathematica*. He stole a first edition of *The Wealth of Nations* by Adam Smith, a letter written by William Jennings Bryan and a rare copy of Elizabeth Cady Stanton's 1898 memoir, *Eighty Years and More: Reminiscences 1815-1897*. He stole a first edition of a book written by the nation's second president, John Adams, as well as a book signed by the third, Thomas Jefferson. He stole the first English edition of Giovanni Boc-

▲ A 1615 Bible, stolen by Priore from the Carnegie Library in Pittsburgh in the 1990s and sold to the American Pilgrim Museum in the Netherlands.

The best-known book stolen from the Oliver Room was a first edition of Isaac Newton's revolutionary mathematical treatise of 1687.

▼

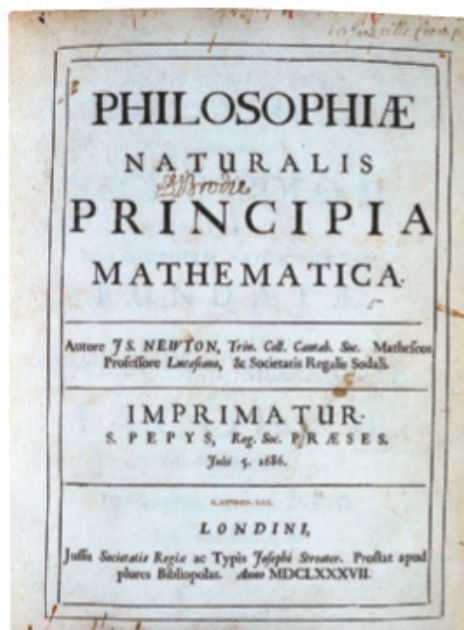
caccio's *Decameron*, printed in London in 1620, and the first edition of George Eliot's *Silas Marner*, printed in the same city 241 years later. From John James Audubon's 1851-54 *Quadrupeds of North America*, he stole 108 of the 155 hand-colored lithographs.

In short, he took nearly everything he could get his hands on. And he did it with impunity for close to 25 years.

WHEN A LIBRARY FINDS that it has been the victim of a major theft, it can take a long time to determine what is missing; an inspection of each shelved item and its pages is a laborious process. But the Carnegie Library of Pittsburgh's rare and antiquarian collection had already been well documented, ever since

the administration moved to establish an archive of the institution's rarest holdings. Greg Priore, who had graduated with an M.A. in European history a few years earlier from nearby Duquesne University, was then working in the library's Pennsylvania Room, a space dedicated to local history and genealogy. He was also pursuing a library science degree at the University of Pittsburgh, with an emphasis on archives management. Both on paper and in person, he seemed like the perfect candidate to run the new archive, and was hired in 1991 to oversee what became the Oliver Room collection in 1992.

Priore comes across as professional but easygoing, the sort of guy who knows a lot



but wears his knowledge lightly. Just under six feet tall, with a resonant voice and a prominent mustache, he was the son of a local obstetrician and spent the bulk of his life within walking distance of the Carnegie Library. An important job at a prestigious institution in his home city was something like a dream.

After getting the job, he worked alongside a preservation specialist to assess the Carnegie Library's rare and antiquarian books. In addition, two rare book experts hired to offer conservation advice found that the library had given little thought to preserving its oldest books. So the staff blocked off windows to get control of the climate, substituted metal shelves for the old ones made of wood, which can leach acid into books, and upgraded the security system. In 1992, the room was officially renamed for William R. Oliver, a longtime benefactor. For years it served as the jewel of the Carnegie Library of Pittsburgh. Docents took patrons on tours, and C-SPAN said it was one of western Pennsylvania's cultural high points. Scholars and journalists plumbed its archives.

In the fall of 2016, library officials decided it was time to audit the collection again, and hired the Pall Mall Art Advisors to do the appraisal. Kerry-Lee Jeffrey and Christiana Scavuzzo began their audit on April 3, 2017, a Monday, using the 1991 inventory as a guide. Within an hour, there was trouble. Jeffrey was looking for Thomas McKenney and James Hall's *History of the Indian Tribes of North America*. This landmark work included 120 hand-colored lithographs, the result of a project that began in 1821 with McKenney's attempt to document in full color the dress and spiritual practices of Native Americans who had visited Washington, D.C. to arrange treaties with the government. The three-volume set of folios, produced between 1836 and 1844, is large and gorgeous and would be a highlight in any collection. But the Carnegie Library's version had been hidden on a top shelf at the end of a row. When Jeffrey discovered why, her stomach dropped. "Once a plump book filled with plates," she would recall, "the sides had caved in on themselves." All those stunning illustrations had been cut from the binding.

The appraisers discovered that many of the invaluable books with illustrations or maps had been ransacked. John Ogilby's *America*—one of the greatest illustrated English works about the New World, printed in London in 1671—had contained 51 plates and maps. They were gone. A copy of Ptolemy's groundbreaking *La Geographia*, printed in 1548, had survived intact for over 400 years, but now all of its maps were missing. Of an 18-volume set of Giovanni Piranesi's extremely rare etchings, printed between



1748 and 1807, the assessors noted dryly, "The only part of this asset located during on-site inspection was its bindings. The contents have evidently been removed from the bindings and the appraiser is taking the extraordinary assumption that they have been removed from the premises." The replacement value for the Piranesi alone was \$600,000.

Everywhere they looked, the auditors found a staggering degree of destruction and looting. They showed their results to the head of the Preservation Department, Jacalyn Mignogna. She, too, felt sick. After seeing historic volume after historic volume reduced to stubs, she went back to her office and wept. On April 7, only five days after the appraisers had begun their inquiry, Jeffrey and Scavuzzo met with the library's director, Mary Frances Cooper, and two other administrators, and detailed what they had already found—or, rather, not found. The next phase of their analysis would have a more pessimistic focus: Now they would try to determine just how far the collection's value had fallen.

BYLINES

Travis McDade, author of *Torn From Their Bindings*, is a rare books curator and an expert on book thefts.
Heather Vaughan is an illustrator and game artist who lives and works in Philadelphia.



On April 11, a Tuesday, Cooper had the lock to the Oliver Room changed. Greg Priore was not given a key.

JUST ABOUT THE ONLY THING that keeps an insider from stealing from special collections is conscience. Security measures may thwart outside thieves, but if someone wants to steal from the collection he stewards, there is little to stop him. Getting books and maps and lithographs out the door is not much harder than simply taking them from the shelves.

While other cultural heritage thieves have gone to great lengths to avoid calling attention to their acts—stealing items of low value, destroying card catalog entries, ripping out bookplates, bleaching library stamps from pages—Priore took the best stuff he could find, and brazenly left the library stamps in, as the library would see when it began to regather the books. Despite this cavalier approach, he was astonishingly successful, more successful than any insider book thief in memory.

Priore and his wife, who worked as a children's librarian, hardly had an opulent lifestyle; the couple lived in a modest apartment crowded with books. But they had four children, who attended private schools: St. Edmund's Academy, the Ellis School and Duquesne University.

All indications suggest that he was perpetrating his crimes not to get rich but rather, as he told police, merely to stay "afloat." For example, in the fall of 2015, Priore wrote an email to the Ellis School asking for an extension on tuition payments. "I am trying to juggle tuition payments for 4 kids," he wrote. A few weeks later, he asked Duquesne officials to lift a hold on accounts assigned to two of his children, since he had made overdue tuition payments. In February 2016, Priore asked his landlord for an extension, falsely claiming his wife had missed work because of a heart attack. The rent was four months past due.

PRIORE LIVED CLOSE ENOUGH to the Carnegie Library of Pittsburgh that he could walk to work in 15 minutes. One route took him past the famous blue edifice of the Caliban Book Shop, one of the city's best-known cultural spots. The store was founded in 1991 by a Pittsburgher named John Schulman, who is 5 feet 7

THE ONLY THING THAT KEEPS AN INSIDER FROM STEALING FROM SPECIAL COLLECTIONS IS CONSCIENCE.

▲
At a news conference in Pittsburgh in 2019, Allegheny County District Attorney Stephen Zappala, center, discusses the recovery of a 1615 Bible stolen from the Oliver Room.

inches tall and stocky, with close-trimmed, thinning gray hair and, often, a graying goatee blending into a few days' growth of beard.

Schulman started his bookselling business in the 1980s, working out of a Pittsburgh apartment. Gregarious and diligent, he acquired the sort of status that comes from years of reputable work in the profession. He was a member of the Antiquarian Booksellers' Association of America (ABAA), serving on its board of governors for the Mid-Atlantic chapter. He was also an appraiser for regional institutions, including the University of Pittsburgh, Carnegie Mellon University and Penn State. After decades selling rare books, he was familiar to most in the business and even somewhat well known outside of it: Thanks to appear-

ances on “Antiques Roadshow,” he was PBS-famous.

For the most part, Schulman treated the books, maps or prints that Priore brought him exactly as he would process the rare and antiquarian materials he got from any source. He would describe an individual book in ways people in the market would understand and, depending on the quality of an item, list it on his website. But with the items Priore brought, there was an added step.

When a book of value or importance is acquired by a library, the institution marks it using one of several different kinds of stamp: ink, emboss or perforation. These marks, which state the name of the library, are meant to do two things: identify the rightful owner and destroy the value of the book for resale. Most major special collections, like the Oliver Room, also adhere a bookplate to the inside front cover.

To sell such a heavily marked book, a typical thief would have to tear, cut and bleach away this evidence; if he was not careful, he would destroy in the process much of what made the book valuable in the first place. Schulman found another way to ready a

books he was selling, and the internet would have exposed him the first time he tried to sell an incunable. Priore simply could not have operated without Schulman’s help and good name—and Schulman could not have gained access to the Oliver Room’s big-ticket items without Priore.

APPARENTLY GREG PRIORE KNEW he was about to get caught six months before it happened. In the fall of 2016, when the library administration was discussing the possibility of an appraisal of the Oliver Room—which would necessarily uncover missing assets—he argued against it. But his colleagues chalked it up to his general obstinacy against having others in his domain, an obstinacy that one librarian noted had grown increasingly pronounced as the years ticked by. Still, with or without Priore’s approval, the administration decided to go ahead with the assessment.

Priore talked to Schulman about it, and the bookseller tried to help his supplier by emailing a number of possible explanations for why many items

THOUSANDS OF PLATES, MAPS AND PHOTOGRAPHS WERE MISSING. IN THE END, THERE WAS NO WAY OF HIDING HIS DECADES OF CRIMES.

stolen book for sale. Using materials he kept at his store, whenever he got a Carnegie book from Priore, he or one of his employees pressed a small red stamp, bright as lipstick, on the bottom of the bookplate. It pronounced the book “Withdrawn from Library.” That mark was to counteract the others.

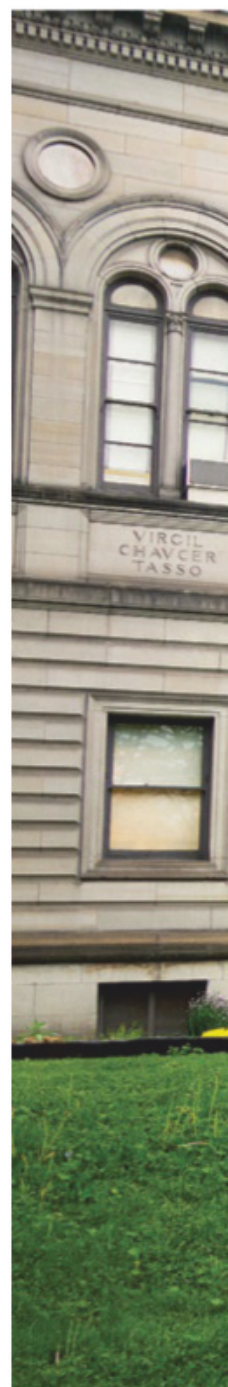
While there is a tradition of librarians and archivists stealing from collections they are meant to steward, not since the 1930s had a dealer as highly reputed as Schulman been implicated. In the 1970s and ’80s, a flamboyant Texas bookman and one-time president of the ABAA named John Jenkins made money selling stolen and forged items to libraries and collectors. But most of his malfeasance was confined to Texas—and no one who knew Jenkins would have been surprised to discover he was an outlaw. He was an indebted gambler who had burned his own store for insurance money, and his life ended in 1989 with a gunshot to the head (authorities differ over whether it was a homicide or a suicide).

Schulman, a constant presence at the major book fairs, seemed as rock-solid as any bookseller in the business—all of which made him the perfect fence for Priore. The librarian could not risk approaching dealers or collectors directly with the types of

were missing. Some items might be out for repair or loan, Schulman offered, urging Priore to create documents attesting to this. He also suggested saying the library’s former director, now dead, had talked about selling off some of the Oliver Room’s better books, and that he might have done so while Priore was away on leave. And Schulman proposed emphasizing “that the Oliver Room is fairly porous and accessible . . . [and] that there have no doubt been multiple opportunities for many different staff and visitors to enter the rooms without proper protocol.”

For his part, Priore suggested that the room’s defenses weren’t perfect. When library administrators interviewed him on April 18, 2017, he told Cooper, the director, that he did leave catalogers, interns and volunteers to work by themselves in the room. He added that maintenance workers—in particular, some men who had done repairs to the roof—had access to the room.

In the end, though, there was no way to hide his decades of crimes. Thousands of plates, maps and photographs were missing; clearly, this was not the work of a patron or workman who had enjoyed a few minutes’ unfettered access. Even if someone else had been stealing from the library, it would have been impossible for Priore not to notice so much was missing. In April he





was suspended from his job and in June he was fired.

Pittsburgh police began a formal investigation in June, and on August 24 executed search warrants at Priore's home, the Caliban Book Shop and a Caliban warehouse. Police questioned Priore the same day. It didn't take long for him to come clean.

When police went to the Caliban warehouse, they brought along Christiana Scavuzzo of Pall Mall Art Advisors. She found, among other items, 91 of the Edward Curtis prints and seven maps from the Blaeu Atlas. Police also found the stamp that Schulman used to indicate that the books he sold had been deaccessioned from the library.

BILL CLASPY IS TWICE a graduate of Case Western Reserve University, with a B.A. and an M.A. in English literature, and today serves as head of special collections for the university's main library. Despite his love for the humanities, he knows it is the sciences that keep the lights on at Case Western. That's why he was especially sad to surrender an important book of scientific history.

In August 2018, he received an email from Lyle Graber, a detective in the Allegheny County District Attorney's office in Pennsylvania, about a recently purchased book of early modern astronomy. "While reviewing evidence in this case," Graber wrote, "it appears that in 2016 you purchased *Quaestiones in Theoricis in Georgii Purbachii* from . . . Caliban Books. Unfortunately, it is very possible that this book is among those having been stolen from the Carnegie Library and sold to unsuspecting buyers such as yourself."

Schulman's catalog description noted the book's condition was "very good with minor ex-library marks." Claspy retrieved the book from its shelf and saw what Schulman meant by "ex-library marks": The first two pages had several stamps and an ash-blue rectangular bookplate from the Carnegie Library of Pittsburgh. Below the bookplate was a small set of red letters pronouncing the book "Withdrawn from Library." Claspy carefully wrapped the book and sent it back to Pennsylvania.

Around the same time, a private collector named

^ The Carnegie Library of Pittsburgh opened in 1895 as one of the first of over 1,600 libraries the industrialist erected in the United States.

Michael Kiesel also received an alarming letter. Kiesel had purchased one of the incunables that Priore had stolen and Schulman had sold to a reputable dealer in England. That dealer asked Kiesel to return the book to Detective Graber, which Kiesel did.

Dozens of people—private collectors, librarians and rare book dealers—received similar letters that August. They sent the books and documents to Allegheny County, where they have become part of a small but extremely valuable library under the supervision of the district attorney.

THIS PAST JANUARY in an Allegheny County court, Priore pleaded guilty to theft and receiving stolen

tences—not always a certainty in crimes involving thefts from a library. At an in-person sentencing on June 18, where Priore apologized for his thefts (“I am deeply sorry for what I have done,” he said), several spoke about the terrible effects of these crimes. “We do not want an apology,” Cooper told the judge. “Any apology from these thieves would be meaningless. They are only sorry that we discovered what they did.” Still, Judge Bicket was not swayed. He sentenced Greg Priore to three years’ house arrest and 12 years’ probation. Schulman received four years’ house arrest and 12 years’ probation. Both Schulman and Priore, through representatives, declined to speak to *Smithsonian*.

“THIS WAS NOT JUST A CRIME AGAINST MY LIBRARY....IT WAS A CULTURAL HERITAGE CRIME AGAINST US ALL.”

property, while Schulman pleaded guilty to receiving stolen property, theft by deception and forgery. The guidelines for such crimes recommend a standard sentence of nine to 16 months’ incarceration but include two other possibilities: an aggravated range of up to 25 months’ incarceration, and a mitigated range that could include probation.

Much of what governs sentencing in property crimes comes down to the numbers. The Pall Mall Art Advisors spent months determining the replacement value for each item Priore had destroyed or stolen outright. The total, they concluded, was more than \$8 million. But even this number, they said, was inadequate, since many items were irreplaceable—not available for purchase anywhere at any price.

Claspy argued that the value of rare books, maps and archival documents cannot be measured by money alone. “This crime was not just a crime against my library, or the Carnegie Library, it was a cultural heritage crime against us all,” he wrote to the judge. The director of the University of Pittsburgh Libraries, Kornelia Tancheva, wrote that a rare book theft, “especially from a public library, is an egregious crime against the integrity of the cultural record and against the public good.”

Further, the Pall Mall Art advisers wondered what books might have been donated to the library in the future, benefiting the people of Pittsburgh, if Greg Priore had not devastated the library’s reputation as well as its holdings. The chilling effect on donors is one reason that many libraries, upon discovering losses from their collections, keep the matter quiet.

More than two dozen people wrote letters asking the judge, Alexander Bicket, to impose strict sen-

After the sentences were made public, Carole Kamin, a member of the board of the Carnegie Natural History Museum, wrote to the *Pittsburgh Post-Gazette* that supporters of local nonprofits “were appalled at the unbelievably light sentences.”

Numerous booksellers have told me that they believe in Schulman’s innocence, saying he was duped—a view the bookseller himself encouraged in an email to colleagues before the sentencing, in which he insisted he pleaded guilty only to save legal costs and put the matter behind him.





Others in the rare book world, though, say the evidence gathered by police was convincing. For instance, Schulman did engage in legitimate business with the Carnegie Library over the years, and on those occasions when he purchased a book through proper channels, he wrote checks payable to the library. But when he bought books from Priore, he made the checks payable to Priore—or paid cash.

It was Schulman's responsibility, as one bookseller told me, to notice there was something odd about the treasures Priore was handing over. The ethics code of the Antiquarian Booksellers' Association of America states that members "shall make all reasonable efforts to ascertain that materials offered to him or her are the property of the seller," and members "shall make every effort to prevent the theft or distribution of stolen antiquarian books and related materials." Schulman was not only a member of the ABAA. He had served on its ethics and standards committee. ♦

< A Pittsburgh literary landmark co-owned by John Schulman, who admitted to receiving goods stolen from the city's Carnegie Library.

Below left, Greg Priore examines a book in the library's Oliver Room in 1999. Below, Schulman after his preliminary arraignment at Pittsburgh Municipal Court in July 2018.





CHASING

THE

PIRATES

**CRIMINALS HAUL
MILLIONS OF TONS
OF FISH FROM THE
WORLD'S OCEANS,
THREATENING
FRAGILE SPECIES.
ONLY SOMETIMES
DO THEY GET
CAUGHT. HERE'S
HOW**

BY TRISTRAM KORTEN

ILLUSTRATION BY YUKO SHIMIZU





T

HE SEAS WERE CALM

and the winds were light when the *Andrey Dolgov*, a cargo ship flying the Cambodian flag, motored in from

the South Atlantic Ocean toward Walvis Bay, Namibia, one March day in 2016. A crewman radioed ahead and asked for clearance to unload hundreds of thousands of pounds of frozen Antarctic toothfish pieces in sacks and boxes, and an additional 6,200 pounds of toothfish heads. The total—about 125 tons—would fetch more than \$3.6 million on the wholesale market.

The ship's forthright declaration raised suspicions. Namibia is part of a coalition of nations that have pledged to protect the Antarctic toothfish, which has a high market value and is biologically vulnerable. When port authorities started asking questions, the *Andrey Dolgov's* crew said they had merely offloaded the fish from a Korean ship named the *Bochang No. 3*. But there was no *Bochang No. 3* registered in South Korea. It seemed doubtful the *Bochang No. 3* even existed. Namibia denied the ship entry and reported the encounter to international authorities. The *Andrey Dolgov* sailed on.

Two months later, the same rust-stained ship appeared in the Chinese port of Yantai, on the Yellow Sea. It carried what was most likely the same stock of frozen Antarctic toothfish, but the crew said the haul was Pacific cod for transshipment to Vietnam. This time, though, officials were on alert. Authorities in Yantai tested the flesh and identified it as Antarctic toothfish. They seized the stock and fined the *Andrey*

This story was supported by the Pulitzer Center.





The ship of many names, including STS-50, photographed in the Indian Ocean by the conservation group Sea Shepherd.



Seafood consumption has shot up

30%

over the last 20 years to

45 lbs. per person.

Dolgov. Once again, though, the ship was allowed to leave.

Meanwhile, in Lyon, France, Interpol Environmental Security investigators tracked the ship's supposed owner, the Red Star Company, and its agent, Poseidon Company, to the South Korean port city of Busan. When Korean officials went to the company's address and knocked on the door, they found an empty apartment and a landlord with few answers.

The Commission for the Conservation of Antarctic Marine Living Resources, an international regulatory body, put the ship on a black list of illegal, unreported and unregulated fishing vessels. Interpol sent out a purple notice, a call for more information about a criminal's methods and devices.

In October 2017, more than a year after its appearance in Yantai, the ship showed up in the port of Dalian, on China's Liaodong Peninsula. It was now calling itself the *Ayda* and flying a flag from the Togolese Republic. Once again, it attempted to offload Antarctic toothfish—about 275 tons. After Chinese authorities boarded the ship to collect information and DNA samples, it fled under cover of darkness.

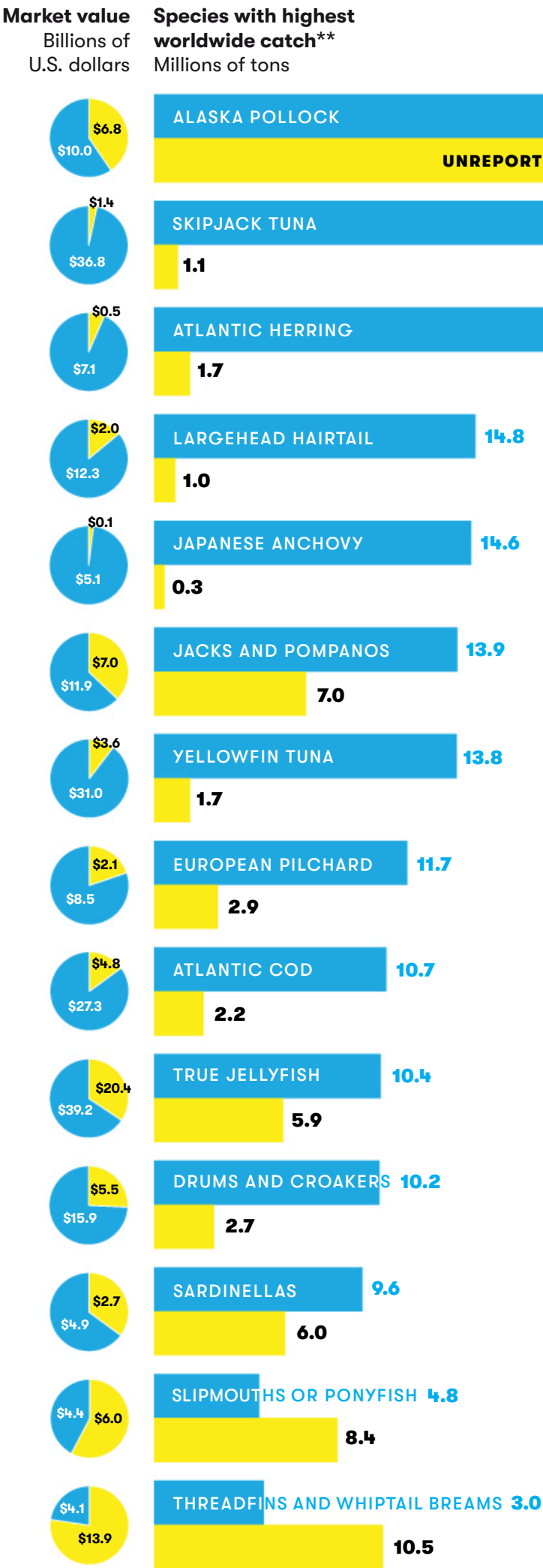
As it headed away from China's coast in May of 2016, the ship was fast on its way to becoming the most wanted pirate fishing vessel on the open water. Nearly a dozen countries would be roped into the search as Interpol tracked it across two oceans and four seas.

There was a reason the ship remained so elusive: It was a master of disguise. It changed its name

SHIP: SEA SHEPHERD / JAX OLIVER; PREVIOUS AND THIS SPREAD, FISH: SEA SHEPHERD

Casting a Wide Net for Data and Dollars

The most reliable picture of popular fish taken worldwide from 2005 to 2014*



*Latest data available. **Excludes anchoveta.

How Many Are Caught?

Scientists say far more fish are captured than is acknowledged

TRADITIONALLY, fishing vessels had the freedom to go largely where they pleased. That changed in 1982, when the United Nations gave every country with a coastline the exclusive rights to the resources found in waters up to 200 nautical miles from its shore. Most countries keep track of the commercial catch in these areas, known as exclusive economic zones, and submit that data to the U.N.'s Food and Agriculture Organization. Yet those figures don't begin to tell the whole story, as shown by these charts.

Daniel Pauly, a biologist at the University of British Columbia's Institute for the Oceans and Fisheries, has worked for some 15 years to fill in the gaps. He and his team use thousands of sources to assemble a truer picture of what's being taken from the oceans. To estimate U.S. totals, for instance, they add recreational and subsistence fishing as well as bycatch from major fisheries—none of it reported to the U.N.

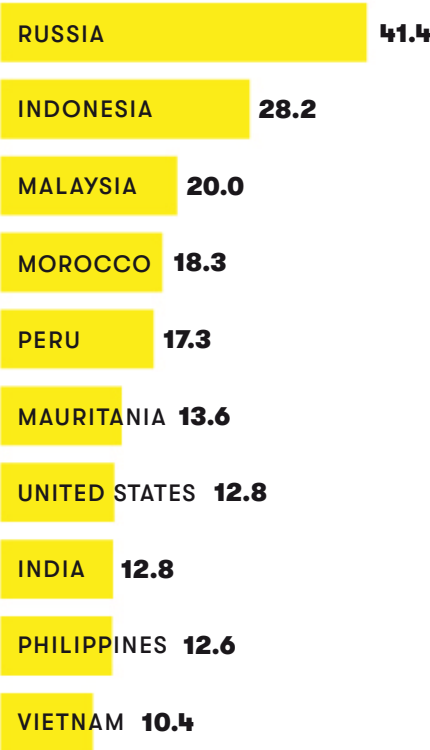
Then there's illegal fishing. Pauly says pirate vessels account for a substantial amount of catch, but it's hard to measure. "That's a huge problem in itself," he adds. "It's like saying we know there's a substantial number of murders in my neighborhood but we don't know how many."

What Pauly and his team can calculate is how many foreign boats are fishing in other countries' waters. This happens most often off the coasts of poor countries that can't afford to patrol their own territories. To help piece together figures for West African countries, for instance, Pauly and his team use satellite images of fishing vessels and calculate how much fish each one would need to catch to stay in business. These totals often far exceed the U.N. reports. To further explore Pauly's data—country by country and species by species—visit SeaAroundUs.org.

STORY CONTINUES ON PAGE 47

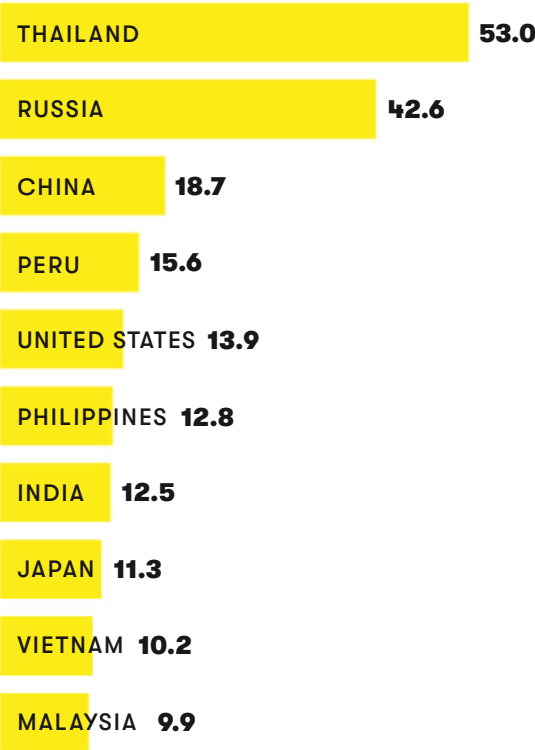
Where Fish Are Disappearing

Countries with the most unreported catch, 2005 to 2014*
Millions of tons



Nations That Are Making a Haul

Countries responsible for the most unreported catch, 2005 to 2014*
Millions of tons



COURTESY SEA SHEPHERD (DETAIL); CHARTS SOURCE: UNIVERSITY OF BRITISH COLUMBIA

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Paper

A Rich History. A Sustainable Future.

Brown paper packages tied up with string, in addition to serving as one of the twentieth century's most hummable moments, are in many ways more relevant than ever. Increasingly, American consumers want to do their part in protecting the planet and building a more sustainable future. By using paper, they're learning that recyclable, innovative materials work well for packaging and being productive at work, home and school. For some consumers, choosing paper means recycling a cardboard box or a newspaper insert. For others, it means choosing a plantable greeting card made from recycled paper and organic seeds.

And for the paper and packaging industry, it means drawing upon a rich history of paper recycling and environmental stewardship to plant new trees and nurture innovative uses for a humble yet essential part of the fabric of daily life.

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It is possible that some of last year's waste paper was seen in the same apartment this year in the form of corrugated cardboard around a Christmas package, a pasteboard container for the eggs, the caps on the cream bottle, or the box the laundry was delivered in," reports the *New York Times* in a story on paper recycling in New York City. It's one that sounds like it could have run in the paper last week, but the date on the byline reads April 10, 1927—nearly a century ago.

Many of the original dealers were immigrants from southern Italy, like the Benedetto family, who in 1929 purchased three buildings in Lower Manhattan from which to run their

the printing of some early American historical documents, including pieces authored by a Founding Father.

"The US was founded on recycling back in the days of Benjamin Franklin," says Laura Thompson, an independent consultant with over twenty years of experience in the paper recycling industry and a PhD in paper science from the Institute of Paper Science and Technology.

Franklin, says Thompson, was a customer of Rittenhouse Paper Mill, a Philadelphia paper mill founded by William Rittenhouse in 1690. The Rittenhouse mill was the first such operation in the American colonies, and William Rittenhouse's work in-

magazine mentions an anonymously authored poem that would have been familiar to many in 18th century Philadelphia:

**So that the flax which first springs
from the land**

First flax, then yarn

**To weave the same which they took
pains to spin**

**Then of the Rags the paper is made,
Which in process of time doth waste
and fade;**

**So what comes from the earth,
appeareth plain,**

The same in Time, returns again.

Paper's connection to the natural world is one Thompson says is as important to the industry as it is to consumers. "If forests don't exist the industry doesn't exist, so it's always been in their best interest to make sure that we had sustainable, well-managed forests regardless of all the environmental benefits," she says. "If you don't have resources, you don't have an industry."

And in many cases that means actively working to manage existing forest land and encourage new growth. One statistic Thompson mentions is that the paper industry, in North America, plants more trees than it harvests, and that often comes from good management. "Depending on the forest type it is sort of like tending a garden," she says, "where if you take out older, dead, more mature wood, the younger trees have more light, they have more access to sun, they're competing less for natural resources and they actually flourish with a little bit of help. And so you can encourage robust, healthier forests by managing it."

The industry is also working to make the production of paper more sustainable. Over the last several years, paper producers from California to Maine



paper recycling empire. The Benedettos and others like them began as rag-pickers with pushcarts, collecting rubbish from apartments and mansions alike and sorting out even the smallest scraps of paper and fabric for potential reuse.

And while some of the early 20th century boom in paper recycling—especially in major cities—was tied to new ideas about trash and sanitation reform, the idea that paper is a fundamentally reusable product is closely linked to

cluded turning linen rags—themselves woven from flax—into paper. As the mill grew, customers like Franklin relied on their recycled paper to print books, pamphlets, and newspapers. And while Rittenhouse and Franklin were men at the top of their respective fields, the knowledge that paper itself was both something that came from recycling and something that would eventually return to the earth was widespread. A 1984 story on Rittenhouse in *Paper Age*

have been focused on reducing water usage, leading plants like American Eagle Paper Mills in Pennsylvania to reduce daily water consumption by nearly 82 percent.

Leafing through a magazine. Excitedly tearing into a box of delicious cereal. Packing up gifts in a cardboard box.

We might do all of these things on the same day and never stop to think about the paper that connects each activity to the next. OK, maybe not the *exact same* piece of paper, but still—paper recycling touches almost every part of daily life, from the way we reuse scraps of printer paper for art projects to the way toilet paper makes its way through sewage treatment centers and into compost that helps grow more trees.

And while many of us learn about reuse, reduction, and recycling in our own homes, the paper industry is doing just that on a larger scale, constantly inventing new ways to use recycled paper and to improve the processes by which paper is made. And as consumers look to make more sustainable choices at the individual level, major corporations are following suit. Some beverage companies are in the process of replacing plastic shrink-wrap on their products with recycled paper, a move that could save thousands of tons of plastic annually. It's the kind of paper Thompson says can come from almost any kind of recycled paper—"layers of material with a mixed paper center." A common refrain, she says, is that each piece of paper is recycled four to seven times, so a high-quality magazine paper might become a box, and then another box, and, she says, "if it continues to get downcycled it might end up as something like toilet paper, and then of course the toilet paper ends up going to the waste treatment plants and ultimately becomes compost."

Many manufacturers of paper products like tissues and toilet paper are publicizing their commitment to sourcing paper

Paper & paperboard is the most recycled material in the country, accounting for more than 2/3 of everything that gets recycled



from responsibly managed forests, and encouraging consumers to learn more about the process by which forests become certified by the Forest Stewardship Council.

And just as a paper collector of the 1900s might leave not even a scrap behind, the industry is working to remind paper users that every little bit counts. "People always wonder if they can recycle envelopes with plastic windows, or packets with staples," says Thompson, and these questions point—encouragingly—to an increased awareness of just how much paper touches our everyday lives. Receipts, box tops, labels—the smallest pieces of paper add up. According to the Environmental Protection Agency, "paper and paperboard is the most recycled material in the country, accounting for more than two-thirds of *everything* that gets recycled."

Most of us learn the three r's in elementary school: reduce, reuse, recycle. And those ideas are at the forefront of many minds now more than ever—should we stop using plastic straws? Invest in reusable containers? Compost at home to rely less on landfills and garbage dumps? What to do to be more environmentally conscious and how to do it can feel overwhelming, which is where paper comes in. It's an already natural material with a deep connection to responsible reuse and an industry looking forward to new methods of production *and* new trees.

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From the Makers of Paper and Packaging

six times, and flew the flag of as many nations. It disguised its electronic identification to confuse pursuers. Twice, it was detained—and escaped.

The tale of this pirate fishing ship, perhaps the most notorious of our time, shines a light into the shadowy universe of illegal fishing—the operators who fund it, the damage they cause to fragile ocean ecosystems and the ways they turn unsuspecting workers into indentured servants. It also shows what can happen when governments and nonprofits join forces on the wild, lawless seas. To piece together this story, I interviewed experts and officials from more than ten countries, reviewed hundreds of pages of documents and traveled to a remote Indonesian island to look for the ship’s captain.

The problem of ships like the *Andrey Dolgov* is more relevant to the average American than it might seem: A great deal of ill-gotten fish ends up in the United States, mixed with legitimate catch. And because the United States is one of the largest seafood markets in the world, American consumers play an unknowing role in perpetuating pirate fishing.



AS THE WORLD’S POPULATION has grown, the demand for seafood has outpaced it. Seafood consumption shot up 30 percent from 35 pounds per person in 1998 to 45 pounds per person in 2018, according to the United Nations. The estimated global catch in 2018 (the latest year for which we have data) was 107 million tons, nearly twice what it was in the late 1960s. The fishers have been ramping up to meet growing demand, but the fish have been struggling to do so.

Gone are the days when small crews of men sailed out to sea with their nets. Nowadays, big fishing companies use helicopters, airplanes and even satellites to track down schools on the surface. Sonar helps them find bottom-dwellers. And once the fish are located, fishers deploy industrial-scale machinery: nets and long lines that stretch for miles, attached to motorized winches. In unscrupulous hands, these methods are notorious for damaging the seafloor, destroying the habitats of a wide range of marine creatures.

By the 1980s, some fish were in such rapid decline they were approaching the point of no return. One of the most dramatic examples is the Atlantic cod, once a dietary staple. Cod was so heavily fished by industrial trawlers off Canada’s Grand Banks that by 1992, the species’ population had been reduced to 1 percent of what it was in the 1960s. And the average size of caught Atlantic cod had decreased by 30 percent. Canada

put a moratorium on cod fishing, abruptly ending an industry that supported entire communities.

The toothfish is an even trickier case because so much of its population lives outside the domain of any country. It comes in two species: the remote Patagonian toothfish and the even more remote Antarctic toothfish. Together, their range covers parts of the Southern Ocean, the Indian Ocean and the South Atlantic. For many years, both kinds of toothfish were minor bycatch for ships searching the cold southern waters for marbled and gray rock cod. But as those stocks dwindled in the 1970s, fishers started paying more attention to the yellow-eyed bottom-dwellers with jagged teeth that came up in their nets. As it turned out, toothfish flesh was white and delicate, without the dark muscle of stronger-swimming fish. Its taste was mild and it melted on the palate like butter. Even if you don’t think you’ve ever tasted it, chances are you have. It’s sold in the States as “Chilean sea bass,” though it is not a bass.

Since the mid-2000s, Antarctic toothfish has accounted for a

larger share of the illegal market than its Patagonian cousin. The problem is that Antarctic toothfish is very easy to overfish because of its unhurried reproduction cycle. It grows to be about six feet long and lives an average of 31 years, but females don’t reach sexual maturity for more than 16 years.

In 1980, 15 countries signed the Convention on the Conservation of Antarctic Marine Living Resources, or CCAMLR, an agreement to protect the toothfish and other Antarctic species, ranging from mollusks to birds. Today, 26 countries are signatories, including the United States, China and the Russian Federation. Legitimate members of the fishing industry have also banded together to form the Coalition of Legal Toothfish Operators, which has offered rewards for information on poachers, and requires members to

document their catch at every stage along the way to market.

Still, the demand for toothfish continued to grow, and illegal operators made up the difference. In 2002, the year after *Bon Appétit* magazine named Chilean sea bass the dish of the year, illegal fishing accounted for up two-thirds of toothfish supply. In 2016, there were 33 ships licensed to catch Antarctic toothfish. The *Andrey Dolgov* was not one of them.



SOMEWHERE ALONG RUSSIA’S eastern coast in late 2017, Aleksandr Matveev rode a tender out to a huge commercial fishing vessel. Matveev, a solidly built 55-year-old man with a broad, clean-shaven face and graying straight hair neatly parted on the side, had been hired by two men—identified later through text messages and other documents as Volodymyr Bulatetsky and Vita Sokirko—to take the ship to the Southern Hemisphere for toothfish.



▲ The *Ocean Warrior*, which pursued the *STS-50*, was custom-built with €8.3 million from the Netherlands to patrol against illegal fishing operations.



The ship Matveev climbed aboard was no longer called the *Andrey Dolgov* or the *Ayda*. It bore a new name, stenciled in black paint: the *STS-50*. Another stencil stated that the vessel was registered in Lomé, the capital of Togo. Matveev would later claim he had no idea he was taking command of a floating criminal enterprise. But the evidence of its past registrations would have been scattered all over the bridge.

In addition to nine Russian and Ukrainian officers, his crew included 20 Indonesian sailors, known for being both highly capable and willing to work for between \$350 and \$380 a month. With Matveev at the helm, the ship headed southwest in early 2018 on its journey toward Antarctic toothfish grounds.

Like the cursed ship in “The Rime of the Ancient Mariner,” it was followed by misfortune. Four months later, the *STS-50* was off Africa’s east coast without having been able to fish, according to accounts crew members would later give investigators. At some point, the ship’s refrigeration system malfunctioned, and the trip would be useless if the fish couldn’t be frozen immediately.

In early 2018, the *STS-50* docked at Madagascar’s Port d’Ehola. Restrictions on the age and size of ships that could use the port prevented the *STS-50*—33 years old and about 175 feet long—from refueling there.

However, during its brief stay, an attentive port inspector—armed with Interpol’s purple notice for the

▲ The captured crew of the *STS-50* surrounded by Indonesian soldiers. The ship’s 600 gill nets could cover 18 miles and enable its workers to haul in more than \$6 million of toothfish in a single trip.

Andrey Dolgov—recognized the vertical stripes of rust staining the hull and promptly made a call. As the *STS-50* headed across the Mozambique Channel toward Maputo to refuel, it was tracked by Interpol and Fish-i Africa, a network of eight East African nations cooperating to fight illegal fishing.



IT WAS EARLY MARCH 2018 when the *STS-50* entered Mozambique’s territorial waters. An armed escort from the country’s navy, customs enforcement, maritime police and port authority intercepted the ship as it headed toward Port Maputo. They seized the crews’ passports and took the English-speaking first mate, Boris Mitchenkov, ashore for questioning.

The crew complied—but Matveev told the officials that his ship had an oil leak and might pollute their waters. So they allowed him to anchor the *STS-50* off Portuguese Island, farther out in Maputo Bay. The ship’s crew agreed to respond to radio calls every two hours and keep the ship’s automatic identification system on at all times.

Ever since 2002, most ships weighing 300 gross tons or more have been required to continuously broadcast a unique nine-digit Maritime Mobile Service Identity number, or MMSI. The system was developed to prevent inshore ships from colliding. At first, VHF radio waves just pinged the numbers off

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shoreside receivers. But recent satellite technology has allowed monitors to read these ID numbers from space, meaning ships can be tracked anywhere. Turning off this signal is called “going dark.”

Over the course of two weeks, with the *STS-50* rocking at anchor off the coast of Mozambique, Interpol investigators worked to get a firm digital lock on the ship. For this, they turned to Charles Kilgour, a sandy-haired British analyst with the fishing watchdog group Ocean-Mind. (He now works for Global Fishing Watch, a nonprofit group whose website lets anyone view real-time satellite activity for fishing vessels over the internet.) As Kilgour collected data and satellite photos, it became clear that the *STS-50* wasn’t broadcasting a unique number during its stay in Maputo. It was broadcasting a series of nine 1’s.

Over the past three years, more than 400 vessels—fishing boats, recreational craft, cargo ships and more—have broadcast the number 1-1-1-1-1-1-1 instead of a unique MMSI. Even when this is illegal, it’s not always devious. Some vessels enter a series of 1’s into the system simply because it’s easy. And some countries aren’t strict about enforcement.

In the case of the *STS-50*, using a generic number was clearly an attempt to throw authorities off its trail. “We had to process and clean the data to find this one tree in a massive forest so that we could see that one signal,” Kilgour recalled. He set to work cross-referencing the ship’s coordinates with other streams of data, including satellite images.

On the night of March 18, a worker on the night shift at Port Maputo noticed that the *STS-50* was acting suspiciously. Up to that point, the ship had been dutifully radioing in every two hours. Suddenly the calls had stopped. And when the worker called the ship, nobody replied.

Then the ship went dark.

Inspectors zoomed out in a motorboat to check on the *STS-50*. But when they arrived at Portuguese Island, they found only the calm waters of the bay rippling in the moonlight where the vessel should have been.



WHEN THE *STS-50* FLED the Maputo harbor, Interpol had a lock on the ship’s real location, thanks to Kilgour’s work. They watched their computers as it headed north, then east. But catching the vessel would demand more than eyes on a screen. It also required boats on the water.

That help came from Fish-i Africa. The group’s member



**Up to
32%
of wild-caught
seafood
imported
into the
U.S. in 2011
had illegal,
unregulated
or unreported
origins.**

^ The Antarctic toothfish can grow to be six feet long and, as a large, active predator, plays an important role in its frigid southern ecosystem.

countries—Mozambique, Comoros, Kenya, Seychelles, Somalia, Tanzania, Madagascar and Mauritius—were often victimized by poachers because they lacked the resources to secure their own waters. (Recall that Somalia’s pirate epidemic of a decade ago began after poachers had pillaged the coast and put local fishers out of business.)

As it happened, just as the *STS-50* was fleeing Port Maputo, an international nonprofit called Sea Shepherd was partnering with Tanzania, patrolling a section of the country’s waters that was near Mozambique.

Sea Shepherd had previous experience tracking toothfish poachers. In 2014 and 2015, one of its ships had chased a Spanish-owned poaching vessel named the *Thunder* for 110 days, the longest open-ocean chase on record. The *Thunder* was the last remaining member of a fleet of illegal vessels that Sea Shepherd called the Bandit 6. The chase ended abruptly when the crew of the *Thunder* appeared to sink their own boat, calling out for rescue and sending evidence of their illegal activities to the bottom of the ocean. The Sea Shepherd captain, Peter Hammarstedt, was hailed as a hero and the story became the subject of a 2018 documentary called *Chasing the Thunder*.

The Sea Shepherd vessel now working with Tanzania was called the *Ocean Warrior*. It was helmed by a lanky Brit named Mike Dicks, a former Cathay Pacific Airways pilot now living in



Australia. Onboard was a task force of Tanzanian officers from diverse agencies—immigration, drug enforcement, fishing, forestry—backed up by four marines.

Dicks and his crew studied the charts and surmised that the *STS-50* was heading toward international waters in the Indian Ocean. To get there, they would have to sail through the territories of at least three nations. The *Ocean Warrior* would need each country's permission to detain the *STS-50* in that country's territorial waters. Fish-i Africa representatives started working the phones.

As the *Ocean Warrior* changed course, the Indian Ocean lay flat before it. It was cyclone season, a time when the water was notoriously calm until it wasn't.



FOR FIVE DAYS, the *Ocean Warrior* sailed on, getting updates on the *STS-50*'s position once a day. But the chase was not only a race to catch the ship. It was also a race against time. The *Ocean Warrior* had already been on patrol for weeks when it got the call from Fish-i Africa, and it had not been able to refuel.

BYLINES

Tristram Korten is a journalist and the author of the 2018 book *Into the Storm*.

Illustrator **Yuko Shimizu** now shops more carefully at the fish counter, thanks to this assignment.

▲ A Sea Shepherd boat, with local authorities and members of Fish-i Africa aboard, intercepts an illegal fishing vessel off the coast of Tanzania in 2018.

As the *Ocean Warrior* closed in on the *STS-50*, it was clear it wouldn't have enough fuel for a return journey if it followed the pirate ship much longer. If it ran only on its electric motors, it wouldn't be able to move fast enough to catch the pirate vessel. Even if it did catch and board the ship, there weren't enough people to guard the crew 24 hours a day for the lengthy journey back.

So after a roughly 1,000-nautical-mile chase, Dicks made the decision to call off the pursuit. "We were pretty upset," Dicks recalled. "The gut-wrenching thing was we couldn't do a *Thunder* and chase these guys around the world." This time, though, the story didn't call for a lone hero. The *Ocean Warrior* would be only one player in a vast international relay race. So Dicks got ready to hand over the chase.

On its last day following the *STS-50*, the *Ocean Warrior* pulled within a mile of the pirate vessel. Then its crew launched a foot-long drone. It was a brilliantly clear day, and the airborne high-resolution camera captured the *STS-50* crew on the stern, as well as the boxes of nets on deck. It also got close-ups of the rust stains.

Then the *Ocean Warrior* pulled back. Matveev and his ship were alone, despite being one of the most wanted ships on the Indian Ocean.



THE OWNERS OF THE STS-50 had told Matveev that an agent in Maputo had sent their passports to South Korea, according to one official. That may have been why Matveev directed the ship through the Malacca Strait, a busy shipping lane between Indonesia and Malaysia.

For a pirate fishing vessel, sailing through Indonesian waters was more dangerous than facing down a cyclone. For four years, the Indonesian government had been waging an uncompromising war against illegal fishing. Susi Pudjiastuti, the former minister of maritime affairs and fisheries, had asserted that unauthorized foreign vessels not only undermined the country's own fishing industry but often took part in modern-day slavery, luring Indonesian workers onboard under false pretenses. Under Pudjiastuti's rules of engagement, navy ships were instructed to seize suspicious boats, detain the crews and sometimes, in incendiary displays of sovereignty, blow up the vessels.

Andreas Aditya Salim, at the time a young lawyer on Indonesia's illegal fishing task force, was home watching TV on March 24 when a text from Interpol flashed on his phone's screen at 10:25 p.m. It gave the STS-50's latitude and longitude and reported that the ship was headed his way. It would enter Indonesia's 200-mile exclusive economic zone in two weeks.

OceanMind and Interpol, meanwhile, kept monitoring the ship, and Interpol kept sending Salim regular updates. By the time it drew close, Salim had all the data: photographs of the ship, records of its course, Interpol's purple notice and the report from Maputo proving the ship had broadcast a false MMSI. He brought the file to his supervisor, Mas Achmad Santosa, in the ministry's marble-floored, sixth-story offices in downtown Jakarta. Salim recommended that the navy intercept the vessel.

On April 6, the Indonesian patrol boat *KAL Simeulue II-I-26* set out from the Sabang Naval Base on the west Sumatra island of Weh. The patrol ship's radar was broken, according to Salim, so the captain, Maj. Yoni Nova Kusumawan, had to rely on dead reckoning—using the STS-50's trackline and rate of speed to estimate where and when to intercept it. It was an ironic low-tech conclusion to what had been an extended high-tech hunt. The voyage took about three hours, but the ship captain's calculations were accurate. With its deck gun loaded and aimed, the *Simeulue* came on the STS-50 at about 5:30 p.m.

Meanwhile, the pirate ship was catching the attention of Indonesians for another reason. As soon as it came within cell-phone range, the crew members, frustrated by their confine-



Shark fins—a luxury item in high demand for soup in China—found on an illegal boat. The ship's 12 Tanzanian workers were sharing one small room with two beds.



In 2016 alone, fishing ships covered more than 285 million miles—the equivalent of 600 trips to the moon and back.

ment, confused about their journey, and angry that they hadn't been paid in two months, had started calling their families. They wanted off, but the ship wouldn't stop. As the *Simeulue* came racing up, the fishing crew rushed the railings and waved their arms frantically to get noticed.

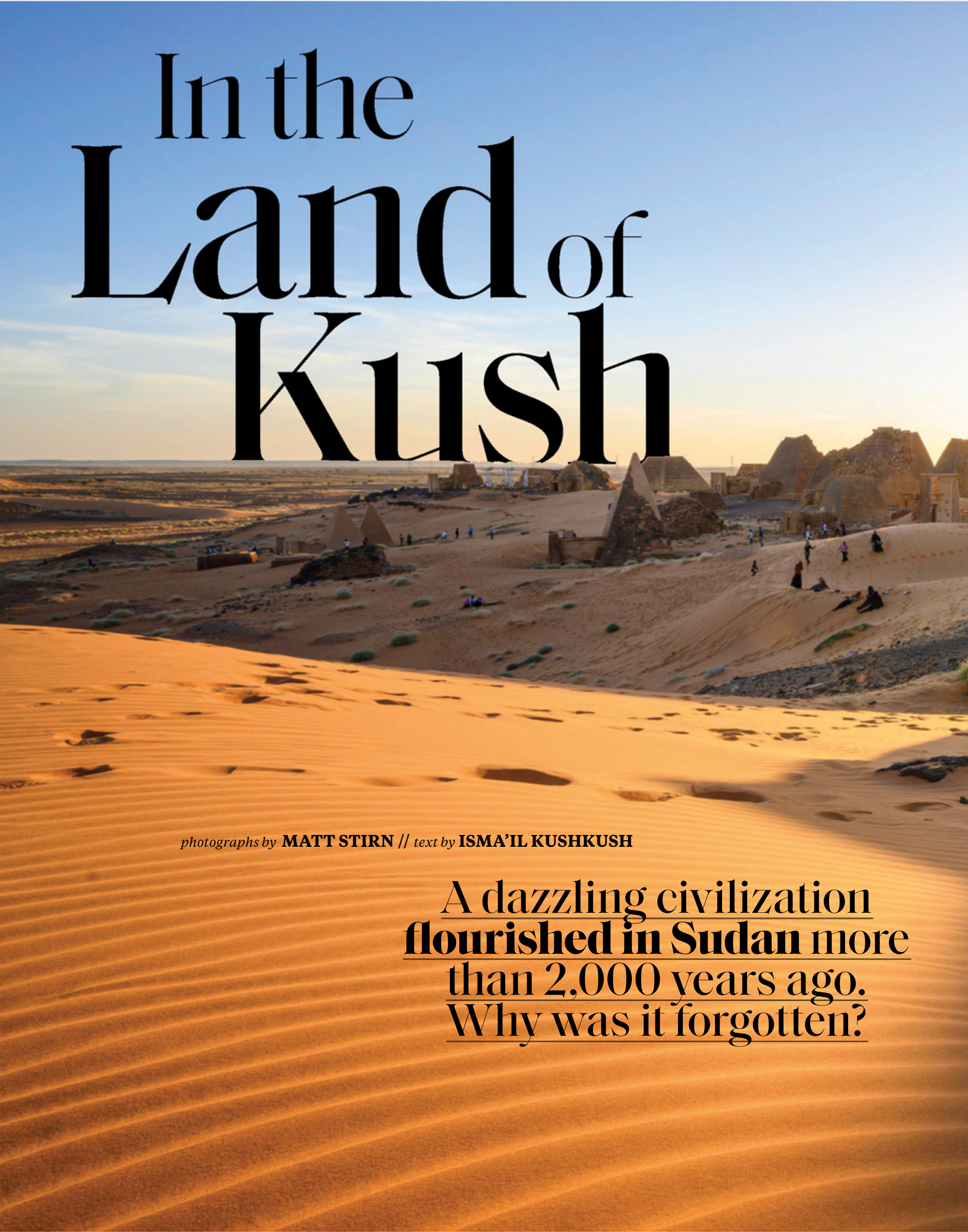
Under armed escort, the STS-50 motored to the naval base in Sabang. Two days later, Salim, who had flown down from Jakarta, boarded the ramp and climbed up to the bridge, where the soldiers had lined up the ship's officers. Matveev, Salim recalled, was standing stock still and looking "quite shocked."

The case against the STS-50 took a little creativity, since Indonesian authorities couldn't accuse the crew of catching fish in the country's waters. Instead, they charged the ship with an equipment violation: storing 600 gill nets topside in open containers on the deck. According to Indonesian law, all fishing gear had to be stowed below deck unless the ship had a special permit.

Salim and his colleague Fika Fawzia, from Minister Pudjiastuti's office, readily concluded that the Indonesian crew members were victims. The officials contacted the Jakarta agency that had recruited the sailors and ordered it to pay the crew's back wages or face a human trafficking investigation. The fishers went home flush with cash.

The Russian and Ukrainian crew members, meanwhile, were processed for deportation.

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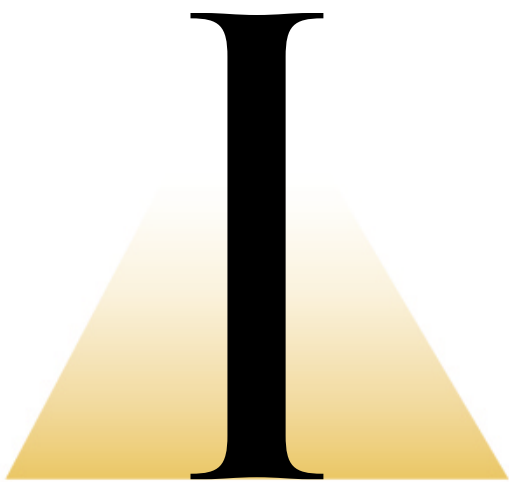
In the Land of Kush

photographs by **MATT STIRN** // *text by* **ISMA'IL KUSHKUSH**

A dazzling civilization
flourished in Sudan more
than 2,000 years ago.
Why was it forgotten?



Meroe, 150 miles north of Khartoum, served as a necropolis for the kings and queens of Kush for close to 600 years.



F YOU DRIVE NORTH FROM KHARTOUM

along a narrow desert road toward the ancient city of Meroe, a breathtaking view emerges from beyond the mirage: dozens of steep pyramids piercing the horizon. No matter how many times you may visit, there is an awed sense of discovery. In Meroe itself, once the capital of the Kingdom of Kush, the road divides the city. To the east is the royal cemetery, packed with close to 50 sandstone and red brick pyramids of varying heights; many have broken tops, the legacy of 19th-century European looters. To the west is the royal city, which includes the ruins of a palace, a temple and a royal bath. Each structure has distinctive architecture that draws on local, Egyptian and Greco-Roman decorative tastes—evidence of Meroe’s global connections.

Off the highway, men wearing Sudanese jalabiyas and turbans ride camels across the desert sands. Although the area is largely free of the trappings of modern tourism, a few local merchants on straw mats in the sand sell small clay replicas of the pyramids. As you approach the royal cemetery on foot, climbing large, rippled dunes, Meroe’s pyramids, lined neatly in rows, rise as high as 100 feet toward the sky. “It’s like opening a fairytale book,” a friend once said to me.

I first learned of Sudan’s extraordinary pyramids as a boy, in the British historian Basil Davidson’s 1984 documentary series “Africa.” As a Sudanese-American who was born and raised in the United States and the Middle East, I studied the history of ancient Egypt and Mesopotamia, the Levant, Persia, Greece and Rome—but never that of ancient Nubia, the region surrounding the Nile River between Aswan in southern Egypt and Khartoum



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The 14th-century B.C. Temple of Soleb was built by Egyptian pharaoh Amenhotep III during a period when Egypt’s reign encompassed ancient Nubia. A strong resemblance to Luxor Temple has led some scholars to suggest that both complexes were built by the same architect.



The land south of Egypt was known to
the **ancient world by many names:**
Ta-Seti, Ta-Nehesi, Ethiopia, Nubia and Kush.



^ Inside the tomb of King Tantamani, circa 650 B.C. in El-Kurru, the site of royal burials during Egypt's 25th Dynasty, when Kush conquered Egypt and initiated the reign of the "Black Pharaohs."

> The largest pyramid at El-Kurru, built around 325 B.C., once stood 115 feet tall. Only its base remains today after it was disassembled during the medieval era to build a nearby fortification wall.





◀
 Ruins at the Temple of Soleb, which was dedicated to the Egyptian sun god Amun-Ra. The temple's patron pharaohs included Tutankhamen, who had his name inscribed on a red granite lion.

Inside a pyramid tomb at Meroe that some archaeologists believe belonged to Kushite King Tanyidamani. The tomb, adorned with Egyptian-style relief carvings, dates to the second century B.C.



in central Sudan. Seeing the documentary pushed me to read as many books as I could about my homeland's history, and during annual vacations with my family I spent much of my time at Khartoum's museums, viewing ancient artifacts and temples rescued from the waters of Lake Nasser when Egypt's Aswan High Dam was built during the 1960s and '70s. Later, I worked as a journalist in Khartoum, Sudan's capital, for close to eight years, reporting for the *New York Times* and other news outlets about Sudan's fragile politics and wars. But every once in a while I got to write about Sudan's rich and relatively little known ancient history. It took me more than 25 years to see the pyramids in person, but when I finally visited Meroe, I was overwhelmed by a feeling of fulfilled longing for this place, which had given me a sense of dignity and a connection to global history. Like a long lost relative, I wrapped my arms around a pyramid in a hug.

The land south of Egypt, beyond the first cataract of the Nile, was known to the ancient world by many names: Ta-Seti, or Land of the Bow, so named because the inhabitants were expert archers; Ta-Nehesi, or Land of Copper; Ethiopia, or Land of Burnt Faces, from the Greek; Nubia, possibly derived from an ancient Egyptian word for gold, which was plentiful; and Kush, the kingdom that dominated the region between roughly 2500 B.C. and A.D. 300. In some religious traditions, Kush was linked to the biblical Cush, son of Ham and grandson of Noah, whose



Sufi graves from the 17th century near the medieval city of Old Dongola. The style of the burials, adorned with white pebbles and marked by black stones, can be traced to the pre-Islamic city of Kerma, from the third millennium B.C., indicating the continuity of Nubian ritual traditions.





“Western archaeologists, including Reisner, were **trying to find Egypt in Sudan,** not Sudan in Sudan.”



descendants inhabited northeast Africa.

For years, European and American historians and archaeologists viewed ancient Kush through the lens of their own prejudices and that of the times. In the early 20th century, the Harvard Egyptologist George Reisner, on viewing the ruins of the Nubian settlement of Kerma, declared the site an Egyptian outpost. “The native negroid race had never developed either its trade or any industry worthy of mention, and owed their cultural position to the Egyptian immigrants and to the imported Egyptian civilization,” he wrote in an October 1918 bulletin for Boston’s Museum of Fine Arts. It wasn’t until mid-century that sustained

excavation and archaeology revealed the truth: Kerma, which dated to as early as 3000 B.C., was the first capital of a powerful indigenous kingdom that expanded to encompass the land between the first cataract of the Nile in the north and the fourth cataract in the south. The kingdom rivaled and at times overtook Egypt. This first Kushite kingdom traded in ivory, gold, bronze, ebony and slaves with neighboring states such as Egypt and ancient Punt, along the Red Sea to the east, and it became famous for its blue glazed pottery and finely polished, tulip-shaped red-brown ceramics.

Among those who first challenged the received wisdom from Reisner was the





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A statue of a Kushite king near Tombos, not far from Kerma, which served as an Egyptian colonial settlement before Kush re-established control over Nubia. The statue retains mystical significance for nearby villagers, who visit for blessings to help with fertility and childbirth.

◀
Near El-Kurru, a local boy waits for hibiscus tea to serve customers at a roadside teahouse along the remote desert highway connecting Khartoum to Cairo.

Swiss archaeologist Charles Bonnet. It took 20 years for Egyptologists to accept his argument. “Western archaeologists, including Reisner, were trying to find Egypt in Sudan, not Sudan in Sudan,” Bonnet told me. Now 87, Bonnet has returned to Kerma to conduct field research every year since 1970, and has made several significant discoveries that have helped rewrite the region’s ancient history. He identified and excavated a fortified Kushite metropolis nearby, known as Dukki Gel, which dates to the second millennium B.C.

Around 1500 B.C., Egypt’s pharaohs marched south along the Nile and, after conquering Kerma, established forts and temples, bringing Egyptian culture and religion into Nubia. Near the fourth cataract, the Egyptians built a holy temple at Jebel Barkal, a small flat-topped mountain uniquely situated where the Nile turns southward before turning northward again, forming the letter “S.” It was this place, where the sun is born from the “west” bank—typically associated with sunset and death—that ancient Egyptians believed was the source of Creation.

Egyptian rule prevailed in Kush until the 11th century B.C. As Egypt retreated, its empire weakening, a new dynasty of Kushite kings rose in the city of Napata, about 120 miles southeast of Kerma, and asserted itself as the rightful inheritor and protector of ancient Egyptian religion. Piye, Napata’s third king, known more commonly in Sudan as Piankhi, marched north with an army that included horsemen and skilled archers and naval forces that sailed north on the Nile. Defeating a coalition of Egyptian princes, Piye established Egypt’s 25th Dynasty, whose kings are commonly known as the Black Pharaohs. Piye recorded his victory in a 159-line inscription in Middle Egyptian hieroglyphics on a stele of dark gray granite preserved today in the Egyptian Museum in Cairo. He then returned to Napata to rule his newly expanded kingdom, where he revived the Egyptian tradition, which had been dormant for centuries, of entombing kings in pyramids, at a site called El-Kurru.

One of Piye’s sons, Taharqa, known in Sudan as Tirhaka, was mentioned in the Hebrew Bible as an ally of Jerusalem’s King Hezekiah. He moved the royal cemetery to Nuri, 14 miles away, and had a pyramid built for himself that is the largest of

those erected to honor the Kushite kings. Archaeologists still debate why he moved the royal cemetery. Geoff Emberling, an archaeologist at the University of Michigan who has excavated at El-Kurru and Jebel Barkal, told me that one explanation focusing on Kushite ritual is that Taharqa situated his tomb so that “the sun rose over the pyramid at the moment when the Nile flooding is supposed to have arrived.” But there are other explanations. “There might have been a political split,” he said. “Both explanations might be true.”

The Black Pharaohs’ rule of Egypt lasted for nearly a century, but Taharqa lost control of Egypt to invading Assyrians. Beginning in the sixth century B.C., when Napata was repeatedly threatened by attack from Egyptians, Persians and Romans, the kings of Kush gradually moved their capital south to Meroe. The city, at the junction of several important trade routes in a region rich in iron and other precious metals, became a bridge between Africa and the Mediterranean, and it grew prosperous. “They took on influences from outside—Egyptian influences, Greco-Roman influences, but also influences from Africa. And they formed their very own ideas, their own architecture and arts,” says Arnulf Schlüter, of the State Museum of Egyptian Art in Munich.

The pyramids in Meroe, which was named a Unesco World Heritage site in 2011, are undoubtedly the most striking feature here. While they are not as old or as large as the pyramids in Egypt, they are unique in that they are steeper, and they were not all dedicated to royals; nobles (at least those who could afford it) came to be buried in pyramids as well. Many Sudanese today are quick to point out that the number of standing ancient pyramids in the country—more than 200—exceeds the number of those in Egypt.

Across from the pyramids is the royal city, with surrounding grounds that are still covered in slag, evidence of the city’s large iron-smelting industry and a source of its economic power. Queens called by the title *Kandake*, known in Latin as “Candace,” played a vital role in Meroitic political life. The most famous of them

BYLINES
The photographer and archaeologist **Matt Stirn** focuses on cultural and environmental conservation. **Isma’il Kushkush** has contributed to the *New York Times*, the *New Yorker*, the *Atlantic* and *Guernica*.



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A nomadic family prepares to set off into the Bayuda Desert, in the eastern Sahara. In Kushite times, a caravan route through this desert connected Napata in the north to Meroe in the south.

>
A fort built by Ottoman forces near the Nile River's third cataract, not far from Tombos and Kerma. Ottoman Egypt conquered much of modern Sudan in 1820, which it ruled until 1885.





◀ The Nubian Rest House, near Jebel Barkal. For years, Kushite sites throughout Sudan remained little visited, but the overthrow of authoritarian President Omar al-Bashir energized a nascent tourism industry.

In addition to traditional hotels, tourism companies offer immersive experiences in the Bayuda Desert, allowing travelers to sleep in tent camps like this one, seen at sunrise.



was Amanirenas, a warrior-queen who ruled Kush from roughly 40 B.C. to 10 B.C. Described by the Greek geographer Strabo, who mistook her title for her name, as “a masculine sort of woman, and blind in one eye,” she led an army to fight off the Romans to the north and returned with a bronze statue head of Emperor Augustus, which she then buried in Meroe beneath the steps to a temple dedicated to victory. In the town of Naga, where Schlüter does much of his work, another *kandake*, Amanitore, who ruled from about 1 B.C. to A.D. 25, is portrayed beside her co-regent, King Natakamani, on the entrance-gate wall of a temple dedicated to the indigenous lion god Apedemak; they are depicted slaying their enemies—Amanitore with a long sword, Natakamani with a battle-ax—while lions rest symbolically at their feet. Many scholars believe that Amanitore’s successor, Amantitere, is the Kushite queen referred to as “Candace, queen of the Ethiopians” in the New Testament, whose treasurer converted to Christianity and traveled to Jerusalem to worship.

At another site not far away, Musawwarat es-Sufra, archaeologists still wonder about the purpose that a large central sandstone complex, known as the Great Enclosure, might have served. It dates to the third century B.C., and includes columns, gardens, ramps and courtyards. Some scholars have theorized that it was a temple, others a palace or a university, or even a camp to train elephants for use in battle, because of the elephant statues and engravings found throughout the complex. There is nothing in the Nile Valley to compare it to.

By the fourth century A.D., the power of Kush began to wane. Historians give different explanations for this, including climate change-driven drought and famine and the rise of a rival civilization in the east, Aksum, in modern-day Ethiopia.

For years, Kush’s history and contributions to world civilization were largely ignored. Early European archaeologists were unable to see it as more than a reflection of Egypt. Political instability, neglect and underdevelopment in Sudan prevented adequate research into the country’s ancient history. Yet the legacy of Kush is important because of its distinctive cultural achievements and civilization: it had its own language and script; an economy based on trade and skilled work; a well-known expertise in archery; **CONTINUED ON PAGE 84**



Pyramid tombs at Jebel Barkal from the Meroitic era, dating between c. 270 B.C. and A.D. 350. The site, near the ancient city of Napata, held special significance for Kush and Egypt, which believed that it was the source of Creation and the birthplace of the sun god Amun-Ra.



Kush is at the **root of black African civilizations**. “Nubia gave black people their own place at the table.”

An aerial photograph of a city, likely Hiroshima, with a white grid overlay. A large, dark, circular impact crater is visible in the lower right quadrant of the image. The text "THE BOMBI" is overlaid in large, white, sans-serif capital letters.

THE
BOMBI

AND THE
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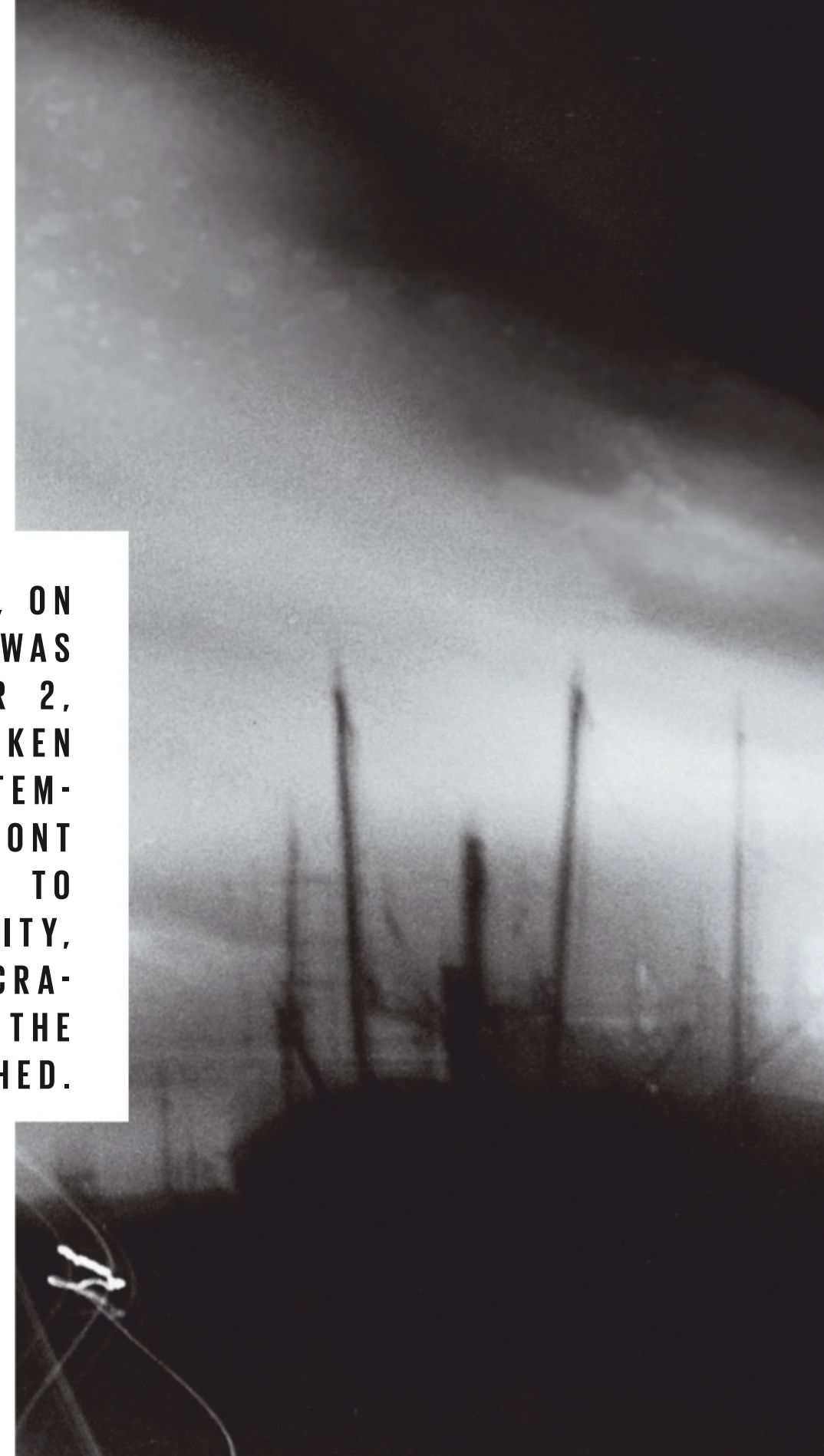
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HOW A CHEMICAL WEAPONS
DISASTER IN WORLD WAR II
LED TO A U.S. COVER-UP—AND
A NEW CANCER TREATMENT

Left, Dugway Proving Ground, in Utah, where the U.S. Army tested chemical weapons during World War II. Above, Allied freighters ablaze in the harbor of Bari, Italy, after the German attack.

BY JENNET CONANT

THROUGH



THE OLD PORT TOWN OF BARI, ON ITALY'S ADRIATIC COAST, WAS BUSTLING. IT WAS DECEMBER 2, 1943. THE BRITISH HAD TAKEN PUGLIA'S CAPITAL IN SEPTEMBER, AND THOUGH THE FRONT NOW LAY JUST 150 MILES TO THE NORTH, THE MEDIEVAL CITY, WITH ITS MASSIVE CLIFFS CRADLING THE SEA, HAD ESCAPED THE FIGHTING ALMOST UNSCATHED.

Only a few miles outside of town, lines of women and children begged for black-market food, but here shop windows were full of fruit, cakes and bread. Young couples strolled arm in arm. Even ice cream vendors were doing a brisk trade.

Bari was a Mediterranean service hub, supplying the 500,000 Allied troops engaged in driving the Germans out of Italy. Grand waterfront buildings were recently designated the headquarters of the United States Fifteenth Air Force. The liberating Tommies had already chased the Nazis from the skies over Italy, and the British, who controlled the port, were so confident they had won the air war that Air Marshal Sir Arthur Coningham announced that Bari was all but immune from attack. "I would regard it as a personal affront and insult if the Luftwaffe should attempt any significant action in this area," he said that day at a press conference.

Four days earlier, the American Liberty ship *John Harvey* had pulled in with a convoy of nine other merchantmen, and some 30 Allied ships were crammed into the harbor, packed against the seawall and along the pier. Their holds were laden with everything from food and medical gear to engines, corrugated steel for landing strips, and 50-gallon drums of aviation fuel. Visible on the upper decks were tanks, armored personnel carriers, jeeps and ambulances. Bright lights winked atop huge cranes that hoisted baled equipment up and out.

At 7:35 p.m.—a blinding flash followed by a terrific bang.

The ancient port's single anti-aircraft battery opened fire. Then came an earsplitting explosion, then another, and another. German Junkers Ju-88s flew in low over the town, dropping bombs short of the harbor. Smoke and flames rose from the city's winding streets.

As incendiaries rained down on the harbor, turning night into day, gunners aboard the anchored ships scrambled to shoot down the enemy—too late. The attacking German airplanes fled into the night. The raid lasted less than 20 minutes.

Soon a tremendous roar came from the harbor. An exploding ammunition tanker sent a huge rolling mass of flames a thousand feet high. A reporter for *Time* magazine noted a "fiery panorama." Eight ships were already "burning fiercely," he



wrote, and the “entire center of the harbor was covered with burning oil.”

A ruptured bulk-fuel pipeline sent thousands of gallons gushing into the harbor, where it ignited into a gigantic sheet of flame, engulfing the entire north side of the port. Flames leapt from ship to ship. Crews worked frantically to free ships before raging fires forced them to jump overboard and swim for it.

The attack on Bari, which the press called “a little Pearl Harbor,” shook the complacency of the Allied forces, who had been convinced of their air superiority in Italy. All told, the Nazis sunk 17 Allied ships and destroyed more than 31,000 tons of valuable cargo. More than 1,000 American and British ser-

▲
The December 1943 German military air raid on Bari destroyed 17 Allied ships, killed more than 1,000 servicemen and ignited a mysterious outbreak.

vicemen were killed, and almost as many wounded, along with hundreds of civilians.

In the crucial days that followed, the task of treating gravely injured sailors would be made even more difficult by wartime secrecy. It would be almost 30 years before the world would learn the truth about what really took place that night, and even today few are aware of the surprising role of the disaster and its impact on the lives of ordinary Americans.

— —
LT. COL. STEWART FRANCIS ALEXANDER, asleep in his quarters at Allied Force Headquarters in Algiers, was awake at the first harsh jangle of the tele-

phone. There appeared to be a developing medical crisis in Bari. Too many men were dying, too quickly, of unexplained causes. The symptoms were unlike anything military physicians had seen before, and they had begun to suspect that the Germans had used an unknown poison gas. There was an urgent request for assistance. Alexander, a medical officer attached to the staff of Gen. Dwight D. Eisenhower at AFHQ, had received special training in chemical warfare. He was being dispatched immediately to the scene.

Alexander looked young for a combat physician. Five-foot-eight and skinny, he was 29, and only the hair thinning at his temples lent him an air of authority. He was popular with the troops, though some patients kidded that his gentle bedside manner was best suited to a pediatrician. But he had been through the brutal invasion of North Africa under Maj. Gen. George S. Patton, and despite a quiet modesty Alexander had proven himself determined and resourceful.

He could have sat out the war in a state-side hospital or research laboratory, but the desire to serve ran deep. He was descended from self-made immigrants, part of a wave of Eastern European Jews who, fleeing famine and persecution, journeyed to the United States in the 1880s and '90s and were forever grateful for the opportunity afforded them in their new home. Alexander's father was an old-fashioned family practitioner in Park Ridge, New Jersey, and Alexander's one ambition was to follow in his footsteps. After excelling at the Staunton Military Academy, in Virginia, he entered Dartmouth College at age 15. A standout in his science courses, he was allowed to advance directly to medical school in his senior year, graduating at the top of his class in 1935. After completing Dartmouth's two-year program, he earned his medical degree from Columbia University, and did his residency training in New York. Then Alexander returned home, where he proudly hung his shingle next to his father's. They enjoyed their shared dream of practicing medicine together for only a few months.

In the spring of 1940, Alexander notified the draft board that he was "available any time." He was called up in November and spent time with the 16th Infantry Regiment, stationed at Gunpowder Military Reservation, in Maryland, not far from Edgewood Arsenal,

Adapted from *The Great Secret: The Classified World War II Disaster That Launched the War on Cancer*, by Jennet Conant. Copyright © 2020 by Jennet Conant. Used by permission of W. W. Norton & Company, Inc.



▲ Bari, on Italy's southeastern coast, in November 1943. The British had captured the strategic port city two months earlier.

home of the Chemical Warfare Service, or CWS. Before long, he contacted CWS with an innovative new design for spectacles that fit within the facepiece of a gas mask. (He was granted a patent on the spectacles, but he turned the rights over to the Army.)

Transferred to Edgewood, Alexander underwent a crash course in poison gases, consulting specialists and experimenting on animals to evaluate toxic agents and forms of treatment; he even investigated agents' medicinal potential. After Pearl Harbor, he taught Army medical personnel how to treat chemical casualties. He was promoted to director of the Medical Division of CWS's Research Laboratory at age 27, and when General Patton embarked in October 1942 with 35,000 troops to attack the coast of Morocco, the first time U.S. ground forces would face Axis armies, Alexander accompanied him as the Consultant in Chemical Warfare Medicine to the Western Task Force.

Now, at 5 p.m. on December 7, 1943, five days after the attack on Bari, Alexander's plane touched down at the city airfield. Waiting for him on the tarmac was the district's senior British Royal Army Medical Corps



◀ A World War II-era poster, with an apparent caricature of Mussolini, to help U.S. troops identify mustard gas, a weapon named for its unpleasant odor.

▲ A rescue boat searches for survivors in Bari Harbor after the December 1943 attack. Fuel from damaged freighters and a ruptured pipeline flooded the harbor.

officer and a group of hospital directors. “Their agitation was immediately apparent,” Alexander recalled, “and I was taken to the hospital at once.”

The 98th British General Hospital, located in a large complex of brick buildings 15 minutes from the harbor, had been spared. Built on the monumental scale beloved by the Fascists, the Bari Polyclinic housed sizable medical wards, a surgical block and laboratories.

“With every fresh explosion, the building creaked and rattled, rocking like a ship in a storm,” E. M. Somers Cocks, a nurse from New Zealand, recalled of the attack. “Doors were wrenched off hinges, windows were shattered, and the bricked-up windows scattered their bricks like hail.” A concussion blast knocked out the power, plunging the hospital into darkness. They were still sweeping up glass when the wounded began to arrive—hundreds of bloodied sailors suffering from shock, burns and exposure. Almost all of them were covered in thick, black crude oil. The litter-bearers brought up the rear, carrying the grievously injured. These were sailors who had jumped from blazing ships, or swum through pools of flaming oil, and were horribly burned.

With so many patients needing urgent attention, there was no time to get many sailors out of their soiled clothes, so the ward matrons did what they could. The “immersion” cases received a shot of morphine, blankets to keep them warm and strong, hot, sweet tea. Then they were left to rest. A British nurse, Gwladys Rees, remembered trying to fix an intravenous line by the light of a match while the wind blew through shattered windows. “We worked by the dim glow of hurricane lamps, long into the night and early morning,” she recalled. “Intravenous bottles were dripping from every third bed, and the corridors were crammed with patients for whom we could find no accommodation.”

— — —
THE FIRST “UNUSUAL” INDICATION, the doctors informed Alexander, was that casualties did not present typical symptoms or respond to treatment in the typical manner. Many patients, despite a thready pulse and low blood pressure, did not appear to be in clinical shock. Instead of being restless or anxious, they were apathetic—some even said they felt “rather well”—and their extremities were warm rather than cold.

After dawn, nurses observed that a few of the men complained of being thirsty, even though orderlies had just gone around with the drinks cart. Suddenly there were so many men clamoring for water the whole ward was in an uproar. Patients were yelling about the intense heat, tearing off their clothing, and, in their frenzy, trying to rip off their bandages.

Overnight, the majority of immersion cases had developed red and inflamed skin, with blisters “as big as balloons and heavy with fluid,” Rees recalled. This, together with widespread nausea and vomiting, led doctors to think the cause might be poisonous fumes, possibly from the fuel oil and explosives. “We began to realize that most of our patients had been contaminated by something beyond all imagination,” she said.

Six hours after the attack, patients who had managed to fall asleep awoke complaining of eye pain. They said their eyes felt “gritty, as though sand particles had gotten in,” Alexander wrote in his report. Within 24 hours, the wards were full of men with eyes swollen shut. As the staff’s unease deepened, British naval headquarters sent a notification that there was a “possibility of blister gas exposure” among the casualties. The hundreds of burn patients with unusual symptoms were to be classified “Dermatitis N.Y.D.”—not yet diagnosed—pending further instructions.

Given the crush of casualties that first night, nonurgent cases who had appeared in “good condition” were sent away, sometimes in their wet uniforms. The next morning many returned, clearly needing treatment. Nurses tried to clean them up, scrubbing the black scum from patients’ skin with kerosene, but many took a turn for the worse. “We did everything humanly possible,



but it was no good,” Rees said. “It was horrible to see these boys, so young and in so much obvious pain. We couldn’t even give them strong sedatives, since we weren’t quite sure how they would react with whatever had poisoned them.”

— — —
THE FIRST UNEXPLAINED DEATH occurred 18 hours after the attack. Within two days, there were 14. Alexander noted the startling downward spiral. “Individuals that appeared in rather good condition in a matter of minutes would become moribund and die,” the doctors told him. The British doctors were mystified. The symptoms did not correspond to case histories of mustard gas poisoning from World War I, or to manuals issued by the Chemical Warfare Service. If the toxic agent was mustard—named for its unpleasant garlicky odor—respiratory complications should have been more prominent.

Several days later, patients with no previous respiratory problems became congested and developed very sore throats, making it hard to swallow. These patients died not as a result of broncho-pneumonia, as might have

IT WAS INCREASINGLY CLEAR TO ALEXANDER THAT MOST OF THESE PATIENTS HAD BEEN EXPOSED TO A CHEMICAL AGENT.



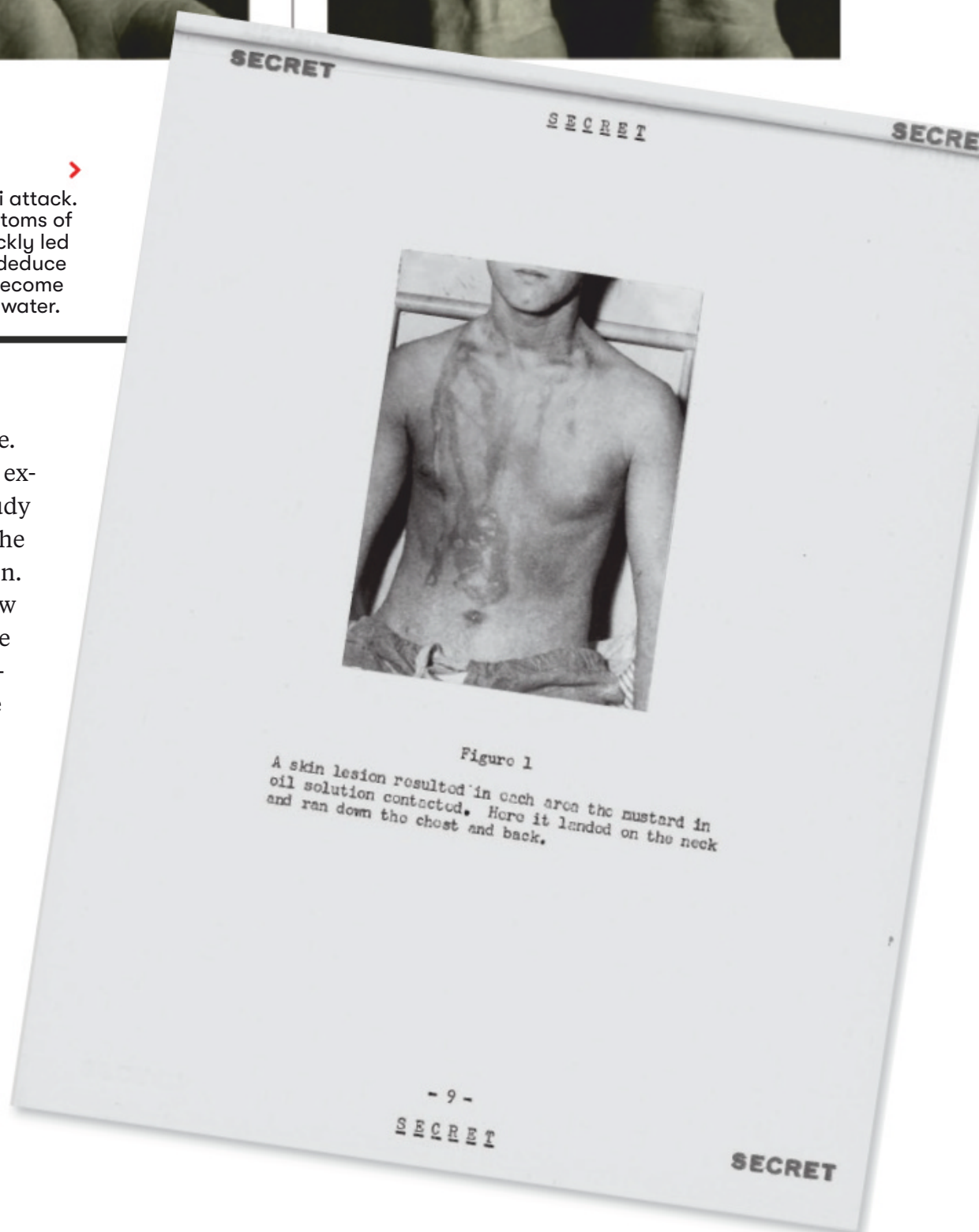
Declassified photographs of test subjects in U.S. military trials who were exposed to toxic agents such as nitrogen mustard during the war.

A survivor of the Bari attack. Widespread symptoms of contamination quickly led Stewart Alexander to deduce that poison gas had become mixed in the harbor water.

been expected, but from cardio-circulatory failure.

Alexander walked the crowded wards. He examined patients, gently lifting blankets to study their wounds. With extraordinary delicacy, he probed the strange patches of thickened red skin. He spoke with each patient in turn, asking how he had come by his injuries. Which ship was he on? How did he come to be rescued? Did he receive first aid at the docks? What about at the hospital? One sailor after another told of being caught in the firestorm, of the pandemonium, of somehow making it to the hospital. There they had waited for as long as 12 and even 24 hours before receiving treatment.

Drawing back the covers from one patient, Alexander studied the burns on an otherwise healthy body. The sailor said he had been aboard a PT boat in the harbor when the German bombers flew over. He heard a loud boom as a nearby ship blew up, and the boat was hightailing it back to shore when he felt a spray of oily liquid land on his neck and run down his chest and back. Alexander



observed the outline of raw, raised skin, shiny with ointment, delineating where he had been sprayed, as if the splash had been imprinted on his flesh. The burns Alexander had seen on other patients were varied, but already he could distinguish between chemical burns and those caused by fire and heat: “Certain patterns were present depending on how the individual had been exposed.”

It appeared to Alexander that sailors who had been thrown overboard and completely immersed in the harbor were burned extensively, while those in boats had comparatively superficial burns wherever the toxic soup had hit them. Several men who had sat in the solution, possibly in lifeboats, had only local burns of the buttocks and groin. A few lucky souls who took it upon themselves to wipe off the oily mixture that first night sustained only minor injuries.

■ ■ ■
AS HE MADE HIS ROUNDS, it was increasingly clear to Alexander that most of these patients had been exposed to a chemical agent. His sense of smell supported his hypothesis. Entering the hospital, he had noticed something different from the usual cloying mix of sweat, urine and disinfectant. “Traces of an odor implanted in my mind said mustard gas,” he later recalled.

He knew that the three most common blister agents were sulfur mustard, lewisite and nitrogen mustard. Although generally referred to as “gas,” all three agents were liquids at room temperature. And all three produced skin injuries resembling burns and serious eye injuries. Particularly worrying was the new, pure-grade nitrogen mustard developed by the Germans, which Alexander had studied the previous year, at Edgewood, after two classified samples were smuggled out of Germany. Its effects were reportedly more rapid than sulfur mustard, and it could penetrate intact skin and cause systemic poisoning. Practically colorless and odorless, apart from a faint fishy smell, it was not easily detected in the field. The Germans were also known to use mixtures of blister agents, so any combination was a real possibility.

It had been five days since the initial exposure, and if there was any chance of saving the hundreds of Allied sailors lying in hospitals all over Bari, plus countless Italian civilians, he would need to act swiftly.

He decided to put the question directly to the commanding officer of the 98th General Hospital, Col. Wellington J. Laird. “I feel these men may have been exposed to mustard in some manner, Colonel,” Alexander said tentatively. “Do you have any idea how this might have happened?”

“None,” came Laird’s reply.

As the chemical warfare consultant to AFHQ, Alexander was cleared to the “highest degree.” He knew the Allies had begun secretly stockpiling poison gas in the Mediterranean, in case Ger-

many, with its back against the wall, resorted to all-out chemical warfare. But he was skeptical that the Allies would have shipped mustard shells into a busy port like Bari and allowed the toxic cargo to sit there as a prime target for an enemy strike. Still Alexander couldn’t rule it out. Tactfully, he tried again. “Have you checked with the port authorities?” he asked Laird. “Could the ships in the harbor have been carrying mustard?”

Laird replied, “I have, and they tell me they have no such information available.”

The burden of proof rested on him. He ordered a series of tests for the patients who were still alive, and insisted on “careful and complete autopsies” on patients who had died under mysterious circumstances. He ordered samples of the harbor waters collected and analyzed. He borrowed personnel from displaced hospital units and put them to work gathering data, performing lab tests on tissue samples and compiling pathology reports.

Suspecting that Laird had dodged his question, Alexander visited Navy House, the British admiralty’s local headquarters. Weary after the long day, he was blunt: Was there mustard gas in Bari Harbor? This was again “absolutely denied.”

Alexander left unconvinced. What he needed was proof. But this was not the familiar menace he had studied at Edgewood. This was a new horror, “mustard gas poisoning though in a different guise than that recognized from WWI,” he wrote later.

■ ■ ■
AT FIRST LIGHT, Stewart Alexander headed for the harbor. He picked his way through mounds of rubble and surveyed the twisted skeletal remains of the Allied convoys. Out on the mole, men were working like ants, removing jagged chunks of concrete and scrap metal. The port, which had been closed for five days and swept for mines,



HE LATER RECALLED THINKING, “IF THEY WERE GOING TO ACCUSE THE GERMANS OF DROPPING MUSTARD WHEN THE GERMANS HAD NOT....”

had partially reopened that morning. A number of burned-out vessels had already been towed out to sea and sunk or blown apart. A coal barge still smoldered on a quay close by, and the fly ash stung his nostrils.

The dark oil-slimed water in the harbor basin looked sinister. One sailor had recalled that the floating oil had been a foot thick on the surface of the water after the raid. It was a mixture of high-octane gasoline and fuel from two dozen Allied ships and, Alexander suspected, mustard gas or a derivative, possibly dropped by the Germans among the incendiary bombs. Alexander wondered what other agents might have been thrown into the mix. The Germans possessed phosphorus and magnesium bombs, both of which would have caused deep chemical burns

and eye injuries. Another possibility was that an Allied cargo ship had been carrying white phosphorus shells and smoke pots—designed to mask approaches and unnerve the enemy—which were released when the vessel was hit.

If it was an aerial gas attack, determining which ships were hit and in what order would help him understand which crews suffered the most direct exposure. Even men not on the water would have inhaled significant doses of the noxious vapor as it spread across the harbor—some of it sinking, some burning, some mixing with the tons of oil floating on the surface, and some evaporating and mingling with the clouds of smoke and flame. German planes could have dropped time-fused mustard bombs that would burst open approximately 200 feet above the water or, in a low-altitude “spray attack,” could have released liquid mustard from tanks that would then have been transformed by the slipstream into tiny droplets resembling a vapor. Alexander reasoned that in either case the attack would have contaminated all the ships in the inner harbor, including the crippled vessels that remained afloat, and drenched all the men on the docks below.

Yet Alexander had found no evidence of mustard contamination in his survey of the dock area. And the Royal Navy personnel he interviewed appeared shocked at the suggestion that poison gas might have been released in the air raid. “Mustard?” one British officer repeated in surprise, shaking his head. “That’s impossible. There’s no mustard here.”

When he spoke with British port authorities, they continued to “state categorically that there was no mustard in the area.” Undeterred, Alexander described in detail the ghastly burns he had seen at the hospital, and he insisted there was no way those injuries could have been sustained by anything except chemical exposure. Of the 534 men admitted to the Allied hospitals following the attack, 281 were suffering from symptoms consistent with mustard poisoning. That day, 45 had died. These were just the documented cases. Many more fatalities could be expected if they did not receive proper treatment urgently. The vast majority of the victims were British—their own countrymen.

The authorities began to waver. They allowed that if mustard gas was present in the harbor, “it could only have come from the German planes.” Alexander considered the ramifications of the charge that Hitler, in a desperate gamble, had risked a gas offensive. But coming as it did after a string of firm denials of so much as a whiff of mustard in Bari, it seemed to Alexander too neat an explanation.

— — —
FOR DAYS HE pored over the clinical records. “Reading the reports,” he wrote, “is to take a journey into the nightmare of the effects of chemical contamination.”



▲ Lt. Col. Stewart Alexander, a physician and cardiologist turned chemical weapons expert, who led the investigation into the Bari disaster.

From his training, Alexander knew that agents such as mustard are toxic in vapor or liquid form when they reach the eyes, nose, lungs or gastrointestinal tract. But the chemicals can also be absorbed by the skin. And any toxic agent in contact primarily with the epidermis would, therefore, result in delayed clinical signs—as was the case with the baffling Bari victims.

These were the symptoms he bore in mind as he studied the case of Seaman Philip Henry Stone, a patient who had abruptly died after asking for a drink. The doctors had pointed to him as an example of one of the inexplicable “early deaths.” The pathologist noted “a generalized dusky erythema,” or reddened skin, on the chest, abdomen and thighs, and many blisters on the face, ears, arms, back and external genitalia. “The lips were dull black in color,” he wrote.

During the autopsy, the pathologist also found that the esophagus displayed a “curious black longitudinal streaking,” probably due to dead cells and tissue. The lungs, a mottled blackish-red color, were congested, the bronchi were filled with pus, and the trachea engorged with fluid. The stomach showed the same black areas, and there were necrotic areas near the opening, most likely caused by swallowing a diluted solution of mustard mixed with oil.

After studying the reports, Alexander concluded that many sailors who sustained blast injuries would not have succumbed to the hemorrhages were it not for other complications: “The serious consequences of imposing the mustard vapor injury upon a lung partially damaged or bruised by blast is at once apparent.”

Alexander was still trying to decide how best to proceed, given the official resistance to his diagnosis, when he received stunning news. A diver he had ordered to search the harbor floor had found fractured gas shells. Tests performed on-site revealed traces of mustard. Ordnance officers from the U.S. Air Force identified the casings as belonging to a 100-pound M47A2 mustard gas bomb. German mustard gas bombs were always marked with the distinctive Gelb Kreuz, or yellow cross. This bomb was definitely American.

ALEXANDER’S INSTINCTS were right—an Allied ship, later identified as the *John Harvey*, had been carrying a cargo of mustard gas. The secret shipment had most likely been destined for a chemical stockpile at Foggia, 75 miles away, in order to improve the U.S. capability to retaliate against a German chemical attack.

As Alexander knew from his training, the M47 bomb was made of simple sheet metal, designed to hold white phosphorus or liquid sulfur mustard. Although the M47A2 model was coated inside with an oil to protect it from corrosion caused by the agent, the bombs were still fragile. They would have been blown to pieces in the German bombardment, releasing lethal mustard into the atmosphere and the oily harbor water.

Alexander found it hard to believe that this was the first time British officials were learning of the chemical weapons. The circumstances of the accident would need further investigating, as would the extent to which the military authorities had covered up the escaped gas. By failing to alert hospital staff to the risk of contamination, they had greatly added to the number of fatalities. At that moment, however, Alexander’s patients took precedence. Now that his suspicions were confirmed, he could advise the staff at Allied hospitals on proper treatment for mustard exposure and try to reduce the number of deaths.

Instead of bringing matters to a close, however, Alexander’s discovery that mustard gas had come from the Allies’ own supply had made a difficult job that much more complicated. The British port officials’ attempts to obfuscate rankled, but that paled in comparison to their effort to shift responsibility to the Luftwaffe. It was not a harmless fabrication. Alexander shuddered to think about the “grave political implications.” He later recalled thinking, “If they were going to accuse the Germans of dropping mustard when the Germans had not. . . .”

Earlier that year, President Roosevelt had issued a stern warn-

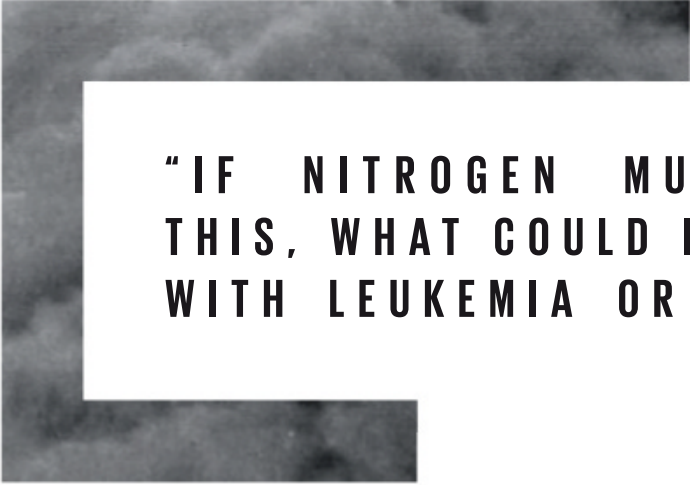
ing that any Axis use of chemical weapons would be followed by the “fullest possible retaliation.” The significance of “any error in interpreting the factor of and source of mustard gas in Bari,” Alexander recalled, “was horrendous.” If the Allied leaders drew the faulty conclusion that the enemy had deployed chemical weapons, it could trigger widespread chemical warfare.

Adding to his anxiety, the daily death toll from mustard contamination, which had started to decline, suddenly spiked, demonstrating the secondary effects of pneumonia on patients already weakened by chemical exposure. There seemed no way to predict how many more men would die.

Nine days after the bombing, Alexander gave his initial findings to AFHQ in Algiers. “The burns in the hospitals in this area labeled ‘dermatitis N.Y.D.’ are due to mustard gas,” he asserted. “They are unusual types and varieties because most of them are due to mustard which has been mixed into the surface oil in the harbour.”

Alexander felt growing urgency that his diagnosis be recognized at the highest levels. Some British medical personnel appeared to be waiting for an official stamp of approval before implementing his treatment strategies. More important, there could be no misunderstanding the source of the mustard. He sent high-priority cables to both the American president and the British prime minister, informing them of the nature of the casualties at Bari and the almost certain origin of the gas on an American Liberty ship. Roosevelt appeared to accept his findings, and responded: “Please keep me fully informed.”

Churchill, however, sent a terse reply: He did not believe there was mustard gas in Bari.



“IF NITROGEN MUSTARD COULD DO THIS, WHAT COULD IT DO FOR A PERSON WITH LEUKEMIA OR LYMPHOSARCOMA?”

Alexander was speechless. He admired Churchill, and he speculated that the British leader’s overriding concern was that the Allies “not acknowledge we had poison gas in that theater of operation because if the Germans retaliated they would be dropping poison gas on England.” There was no questioning the wisdom of this command decision, but Churchill’s opposition undermined Alexander’s credibility and ability to do his job.

Alexander sent a second telegram. He cited his findings at much greater length, stating “beyond any doubt” that these casualties were due to mustard exposure. He was informed that Churchill maintained that “the symptoms do not sound like mustard gas,” which Churchill had witnessed firsthand during World War I. His instructions were the same: “The doctor should reexamine his patients.”

Flummoxed, and unsure how a “lowly, lonely American



medical officer” was supposed to respond, Alexander appealed to the liaison officer for advice. The man advised him: One did not argue with the prime minister.

AFTER A SLEEPLESS NIGHT, Alexander returned early to the hospital determined to prove there had been no mistake about his diagnosis. Churchill was a brilliant man, with an uncanny instinct for the salient fact, and he had put his finger on the most important question about the Bari victims: Why were the toxic effects so much more serious than any other recorded in military history? Far more patients were dying of mustard symptoms at Bari than on the battlefields of WWI, when the fatality rate had been around 2 percent. The death rate in Bari was more than six times higher—and climbing.

The difference, he believed, was the amount of mustard absorbed through the skin from the unprecedented, intimate and lengthy contact as a result of being immersed in the oily harbor water, and then left to sit in soaked uniforms. “In this group of cases,” Alexander postulated, “the individuals, to all intents and purposes, were dipped into a solution of mustard-in-oil, and then wrapped in blankets, given warm tea, and allowed a prolonged period for absorption.”

Alexander’s medical inquiry into mustard’s effects on the victims was just beginning. As he sat reviewing the case sheets and pathology reports, one recurring observation leapt out at him: the dev-

▲ Cornelius “Dusty” Rhoads, center, former medical chief of the Chemical Warfare Service and director of the Sloan Kettering Institute for Cancer Research.

astating effects on the patients’ white blood cells. He flipped through a stack of records. There it was again and again—the white blood cell counts fell off sharply. In patients who recovered, white blood cell concentrations corrected by the second or third day; but in some cases, the white blood cell count dropped precipitously beginning on the third or fourth day. He noted that lymphocytes, the white blood cells found in the lymph organs and of importance to the immune system, “were the first to disappear.” What he was looking at made the hair on the back of his neck stand on end. Alexander had seen these exact results before, but never in human beings.

In March 1942, the authorities at Edgewood, having received the nitrogen mustard compounds smuggled out of Germany, turned the samples over to Alexander to investigate their impacts on the body. Alexander and his colleagues immediately began detailed experimental protocols on animals. The first studies, which recorded the effects of exposure on the skin, eyes and respiratory tracts of rabbits, showed results that were completely in line with exposure to sulfur mustard in the past and with what was expected from a highly toxic agent of this kind.

Next, they set up an experiment to determine the effects on the blood and blood-forming organs. Twenty healthy rabbits were exposed to lethal doses of the agent. To the research team’s astonishment, the white blood cell count of the rabbits dropped to zero or

points very close to zero. No one at the lab had ever seen such rapid destruction of white blood cells and the accompanying deterioration of lymph nodes and bone marrow. The researchers consulted the literature and found no reports of the same kind of reduction of white cells in the blood, known as leucopenia, or anything that had the same effect. Alexander's first thought was that they must have a "bad batch of rabbits." But when they repeated the experiment with a new group, the results were the same.

Alexander ordered the tests repeated with other lab animals to rule out the possibility of poor stock or species sensitivity. They tried guinea pigs, rats, mice and goats. Each time, they achieved the same dramatic effects: sudden, severe leucopenia, severe lymphopenia, lymph node depletion and marrow depression. After exposure, the white blood cell counts rapidly disappeared, and the lymph nodes were almost completely dissolved, left as "shrunk little shells" of what they had been.

While still at Edgewood, Alexander was fascinated by the idea that mustard interfered with the body's mechanism for producing blood cells, especially white blood cells. Because of the dramatic and reproducible effects, he could not help but wonder about the possibility of using the compounds directly, or in modified forms, on human beings with diseases of the blood. If nitrogen mustard attacked white blood cells, perhaps it could be used to control leukemia, the most common type of cancer in children, with its unrestrained white blood cell growth, by using different dosages to destroy some but not all excess cells without annihilating patients. But when Alexander proposed an ambitious set of experiments into mustard's medicinal properties, he was told first by his chief, and then, on appeal, by the National Research Council, that this was not the remit of the Edgewood laboratory. There was not enough time or money to pursue collateral lines of investigation that did not facilitate the national defense. He was ordered to put the project aside and return to his work on mustard casualty management, treatment and decontamination. Chasing miracle cures would have to wait until after the war.

Now, sitting in an Allied military hospital 6,000 miles away, not even two years later, Alexander held in his hands incontrovertible evidence: "mustard gas did, in truth, selectively destroy blood cells and blood-forming organs," he wrote. Doctors and medical researchers had never before encountered such an extraordinary level of sulfur mustard toxicity, which, when it mixed with the oil dumped into Bari Harbor, approximated the damage done by the experimental nitrogen mustard compounds—and allowed its systemic effects to be seen clearly for the first time. It had taken a freak

> The first chemotherapy based on nitrogen mustard was approved in 1949. Several chemotherapeutic drugs based on Alexander's research remain in wide use today.



accident, and the massive exposures of wartime, to verify in people the phenomenon demonstrated in laboratory rabbits. "It all added up to the same conditions I had seen in my prewar animal work," Alexander later recalled. "Blood cells disappeared, and lymph nodes just melted away." He remembered thinking, "If nitrogen mustard could do this, what could it do for a person with leukemia or lymphosarcoma?"

Alexander could not save the worst of the Bari mustard gas casualties, he knew, but perhaps he could make their deaths count for something. A one-in-a-million chance had landed him, one of the few doctors in the world who had studied mustard's curative potential, in the middle of a disaster with a morgue full of case studies. It was an unthinkable rare chance to perform a pioneering investigation into the toxin's biological effects on the human body—the kind that would be impossible with living volunteers.

He ran down the hall, yelling for more blood tests. He made sure special care was taken in preparing specimen samples to send to Edgewood for microscopic examination, and improvised a fixative solution, hoping the tissue specimens would withstand the long journey. The hematological analysis would not be as complete as he would like. The heavy burden carried by Allied combat hospitals, and the limited facilities, would prevent them from conducting important tests, including studies of bone marrow

BYLINES Jennet Conant, the author of five previous books, has written for *Newsweek*, *Esquire* and *Vanity Fair*.



pitals in Bari were instructed to alter the patients' charts. Alexander's diagnosis of toxic exposure was deleted and replaced with the generic terminology for combat casualties—burns, lung complications, all other injuries and deaths “due to enemy action.”

The feared German chemical attack never came. The Wehrmacht was deterred by logistical constraints, combined with Allied air superiority and the threat of massive retaliatory strikes. Ironically, the Germans had known all along about the source of the poison gas in the harbor. Nazi spies in the port had suspected that the Allies might be concealing mustard bombs among the munitions they were stockpiling in Italy. After the air strike, they sent down their own diver, an Italian frogman loyal to the Fascists, who recovered a fragment of an M47 bomb casing, which confirmed the chemical weapons were American.

British officials never acknowledged Alexander's Bari report, but it garnered high praise from Eisenhower's senior medical advisers. They lauded the exceptional job Alexander had done under challenging conditions, but told him that a commendation was withheld for fear of “offending the Prime Minister.” Nevertheless, Col. Cornelius P. “Dusty” Rhoads, chief of the Medical Division of the Chemical Warfare Service, hailed Alexander's meticulous investigation as so complete, and of such immense value to medicine, that it represented almost “a landmark in the history of mustard poisoning.”

Rhoads was eager to explore the toxic agent's therapeutic potential. Like Alexander, he believed the Bari data pointed the way toward a promising new chemical targeting white blood cells that

could be used as a weapon in the fight against cancer. Rhoads, who in civilian life was head of New York's Memorial Hospital for the Treatment of Cancer and Allied Diseases, seized on the wealth of new information provided by the Bari victims as a breakthrough. His ambitious plans for Memorial Hospital now converged with Alexander's report and crystallized into a single mission—to exploit military research into poison gas to find a chemical that could selectively kill cancer cells.

ALEXANDER'S INVESTIGATION REPRESENTED ALMOST “A LANDMARK IN THE HISTORY OF MUSTARD POISONING.”

and blood chemistry. Alexander would need to be scrupulous in gathering as much data as possible, and in badgering lab technicians to do what he felt was necessary. This time, he wanted to make absolutely sure that his insight into the systemic effects of mustard was entered into the medical record, with an eye toward seeing whether the substance could be used not to destroy, but to heal.

— — —
ON DECEMBER 27, 1943, Lt. Col. Stewart Alexander submitted his preliminary report on his ten-day investigation of the Bari Harbor catastrophe. It was immediately classified. Eisenhower and Churchill acted in concert to keep the findings secret so there was no chance Hitler could use the incident as an excuse to launch a gas offensive. Any mention of mustard gas was stricken from the official record, and the medical staff of the British hos-

Armed with the Bari report, and the results of a top-secret Yale University trial that demonstrated for the first time that a regimen of intravenous nitrogen mustard—in tiny, carefully calibrated doses—could result in human tumor regression, Rhoads went in search of funding to develop this experimental treatment, known today as chemotherapy. He persuaded Alfred P. Sloan Jr., the chairman of General Motors, along with the company's wizard engineer, Charles F. Kettering, to endow a new institute that would bring together leading scientists and physicians to make a concentrated attack on cancer. On Tuesday, August 7, 1945, the day the world learned that an atom bomb had been dropped on Japan, they announced their plans for the Sloan Kettering Institute for Cancer Research. World War II was over, but the war on cancer had just been launched.

CONTINUED ON PAGE 80

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Mustard Gas

CONTINUED FROM PAGE 79

The official secrecy surrounding the Bari disaster continued for decades. The military refused to acknowledge the chronic effects of mustard exposure on hundreds of surviving sailors, naval personnel and civilians, resulting in years of suffering, controversy and lawsuits for medical compensation in both the United States and Britain. In 1961, Alexander volunteered to help the National Academy of Sciences conduct a study of the American survivors, but the project stalled when identifying victims of contamination proved too difficult. "All the records said 'burns due to enemy action,'" recalled Alexander.

Alexander was discharged from the Chemical Warfare Service in June 1945, and returned home with a chest full of medals and battle ribbons, as well as a new bride, Lt. Col. Bernice "Bunny" Wilbur, the highest-ranking Army nurse in the Mediterranean Theater. He turned down Rhoads' offer to work at the fledgling Sloan Kettering Institute. Instead, he kept his promise to his father to continue their family practice in Park Ridge, New Jersey, where he became a much beloved physician and cardiologist, and where he raised two daughters with Bunny. He served for 18 years as director of the Bergen Pines County Hospital, and taught at the medical schools of Columbia and New York University. He never boasted of his wartime exploits, but he always took quiet pride in his unique contribution to medicine, and did not mind that while many textbooks eventually traced the modern age of chemotherapy to the Bari disaster, the details of his investigation remained enshrouded in secrecy. He died on December 6, 1991, of a malignant melanoma—skin cancer—but not before the U.S. Army belatedly commended him, three years earlier, for his actions during the Bari episode. "Without his early diagnosis and rapid initiation of appropriate and aggressive treatment, many more lives would have been lost and the severity of injuries would have been much greater," the commendation read. "His service to the military and civilians injured during this catastrophe reflects the finest measure of a soldier and physician." ♦

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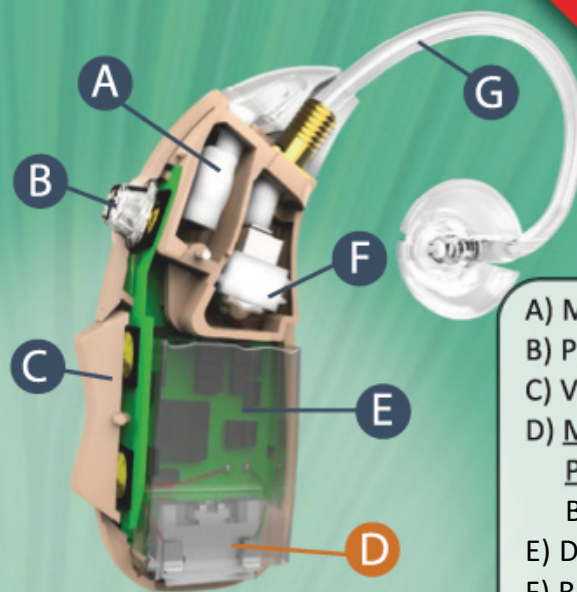
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Chasing the Pirates

CONTINUED FROM PAGE 51

But Matveev had to stay. As captain, he was responsible for the violation.

About two weeks after the arrest, prosecutors Muhammad Rizza and Mawardi (some Indonesians only use one name) met the captain in their office in Sabang. At first, Matveev was defiant. Using his first mate Mitchenkov as an English translator, Matveev denied all wrongdoing. He insisted that he hadn't been fishing, hadn't broken any laws—that the whole thing had been a misunderstanding.

Eventually his exasperation faded. He smiled and told the prosecutors that they were all professionals and he was sure this could be sorted out. Someone even took a cellphone picture of Matveev posing with the prosecutors. Matveev wore calf-length jean shorts, a gray T-shirt with the slogan “Drink Carefully” on it, sandals and an everything's-going-to-be-OK smile on his face. He had his arm around Rizza, who stood stiffly in his green uniform.

Then the prosecutors took Matveev to a jail cell.

The Russian Embassy in Jakarta declined to send a lawyer or interpreter to help Matveev, telling Rizza it couldn't afford to. Rizza was stunned. “I don't understand, Russia is a big country!” Rizza said. An embassy official did visit Matveev a couple of times, but it was the Indonesians who supplied an interpreter.

A judge ultimately fined Matveev 200 million Indonesian rupiah, just under \$14,000. It was money he didn't have. The Indonesians never heard from the ship's owners, who also stopped returning Matveev's text messages and calls.

At his last hearing, on August 2, 2018, Matveev's defiance crumbled, and he teared up when the judge sentenced him to four months in jail. “I'm the only one providing for my family,” he said to the judge, according to Rizza.

After the trial, the Russian Embassy called Rizza and asked if the ship would be returned to its owners. “I told them that according to our laws it cannot be,” Rizza dryly recalled.



MATVEEV WAS, OF COURSE, merely one cog in the machine, as disposable as old fishing nets, as interchangeable as the names on the stern of the ship. Such expendability is in keeping with the illegal fish industry, a low investment, low financial risk operating scheme that is highly profitable. At the time of the ship's seizure, there were 16 vessels on the Antarctic convention's list of illegal fishing boats. It's not clear how many have been caught.

SEE MORE of Jax Oliver's drone photos of illegal fishing boats at [Smithsonianmag.com/overfishing](https://www.smithsonianmag.com/overfishing)

The story of *STS-50's* capture can be considered something of a success. While there is no way to know exactly how much money the ship brought in over its entire career, estimates have been as high as \$50 million. The sheer number of governments, conservation groups and investigative agencies that came together to stop it shows how seriously illegal fishing is now taken as a transnational crime.

Those on the front lines of protecting the world's threatened marine resources are encouraged by another change: the increasing role played by developing nations. “I was so impressed that Tanzania committed to this pursuit,” said Hammarstedt, the Sea



▲
Capt. Aleksandr Matveev on trial in Indonesia. By jailing him for being unable to pay his fine, the judges were sending a message to would-be poachers.

Shepherd captain who hunted the *Thunder* in 2014 and 2015 and now oversees the Sea Shepherd's African patrols. After all, Tanzania as a nation had no stake in the matter other than helping a neighbor in the global fight against illegal fishing.

Matveev served his four months in the small, blue one-story jail on Sabang. (I approached Matveev while he was at the jail, but he declined to be interviewed for this story.) Then, on a sweltering December day with storm clouds billowing offshore, police took the former captain from his cell and drove him across town to the immigration office, where he was processed and handed his passport. With the island's airport closed, the only way off the island was by boat.

On the drive to the ferry terminal, Matveev might have passed the Sabang Naval Base, and across the wide green expanse of lawn there, he would have been able to gaze at his old ship, which had trailed ill fortune across half the world's seas.

It was still there, sandwiched between the naval base's dock and the *Silver Sea 2*, a Thai ship caught transshipping illegal catch in Indonesian waters in 2015. Both of the enormous vessels were rocking gently in the bay—rusting, greasy monuments to our insatiable appetite for fish. ♦

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Answers from Page 26

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9	E	O	N					10	A	G	R	I	P	
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29	A	D	B	O	T				32	S	L	A	W	
33	S	L	A	T	E						34	A	S	I
35	M	E	R	O	E						36	D	E	M

Sudan

CONTINUED FROM PAGE 64

an agricultural model that allowed for raising cattle; and a distinctive cuisine featuring foods that reflected the local environment, such as milk, millet and dates. It was a society organized differently from its neighbors in Egypt, the Levant and Mesopotamia, with unique city planning and powerful female royals. "At its height, the Kingdom of Kush was a dominant regional power," says Zeinab Badawi, a distinguished British-Sudanese journalist whose documentary series "The History of Africa" aired on the BBC earlier this year. Kush's surviving archaeological remains "reveal a fascinating and uncelebrated ancient people the world has forgotten."

While Egypt has long been explained in light of its connections to the Near East and the Mediterranean, Kush makes clear the role that black Africans played in an interconnected ancient world. Kush was "at the root of black African civilizations, and for a long time scholars and the general public berated its achievements," Geoff Emberling told me. Edmund Barry Gaither, an American educator and director of Boston's Museum of the National Center of Afro-American Artists, says that "Nubia gave black people their own place at the table, even if it did not banish racist detractors." The French archaeologist Claude Rilly put it to me this way: "Just as Europeans look at ancient Greece symbolically as their father or mother, Africans can look at Kush as their great ancestor."

Today, many do. In Sudan, where 30 years of authoritarian rule ended in 2019 after months of popular protests, a new generation is looking to their history to find national pride. Among the most popular chants by protesters were those invoking Kushite rulers of millennia past: "My grandfather is Tirhaka! My grandmother is a Kandake!"

Intisar Soghayroun, an archaeologist and a member of Sudan's transitional government, says that rediscovering the country's ancient roots helped fuel the calls for change. "The people were frustrated with the present, so they started looking into their past," she told me. "That was the moment of revolution." ♦

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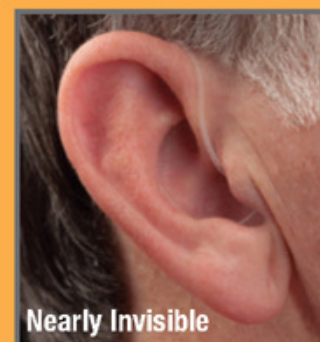
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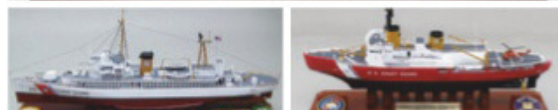
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Q: How did Amelia Earhart raise the money for her flights?

Andy Sauer | Suffield, Connecticut

FEMALE PILOTS generally could not land steady jobs during the early 20th century. So Earhart resorted to publicity stunts to earn money and, ironically, set numerous flight records in the process. After one of her feats made headlines, she went out to raise funds for the next one. “I make a record and then I lecture on it,” Earhart said. According to Dorothy Cochrane, curator of general aviation at the National Air and Space Museum, Earhart sometimes flew her own plane from place to place, footing the bill all the way and just breaking even with the money she raised. She also wrote books and contributed to *Cosmopolitan* magazine, designed a line of clothing for active women that was sold at 30 department stores nationwide and participated in a promotional deep-sea dive.

Q: What finally ended the 1918 flu?

Richard McCord | Santa Fe, New Mexico

HYGIENE AND HERD IMMUNITY, most likely. The deadly H1N1 influenza virus first struck in the springtime. Flu viruses thrive in cold weather—heat degrades their outer coating and their ability to float through the air—so cases dropped off in the summer of 1918. But the virus came back with a vengeance that fall, and soldiers fighting in World War I carried it all over the globe. A third wave began in Australia, reaching North America in early 1919. By the time that wave was through, a third of the world’s population may have been infected, says Alexandra Lord, chair of the Division of Medicine and Science at the American History Museum. If that’s the case, Lord says, it’s possible the virus “simply ran out of people to infect.” New sanitary practices, based on growing acceptance of germ theory, also helped—along with the end of the war, which made it easier for populations to stay in place.

Q: Why do certain species of birds begin singing when the sun is coming up?

Keith Twitchell | New Orleans

TO SHOW THAT they’re ready for action, says Scott Sillett, head of the Migratory Bird Center at Smithsonian’s National Zoo. In temperate climates, male birds sing first thing in the morning to tell competitors they’ve made it through the night and are on the alert. In the darkness before dawn, when visual cues are hard to see, singing—and serenading potential mates—may also be the easiest form of social interaction. This burst of early morning communication is known as the dawn chorus.

Q: How do telecommunication satellites keep orbiting at the right altitude and speed?

Fred M. Smith | Auburn, Washington

IT BEGINS WITH THE LAUNCH, says Martin Collins, curator of the Space History Department at the Air and Space Museum. A satellite flies into space on a ground-launched rocket, and then a motor on the satellite itself takes over and carries it the rest of the way—to 22,236 miles above Earth’s surface. (By comparison, the International Space Station is only about 240 miles above Earth.) The motor stabilizes the satellite in a circular orbit around the Equator. From that point on, very small motors periodically adjust the satellite to keep it geostationary—that is, orbiting at the same speed Earth rotates so it seems to hover in the same spot above us. This kind of orbit is sometimes called a Clarke orbit, after the science fiction writer Arthur C. Clarke, who popularized the idea in 1945. ♦



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